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PROCEEDINGS

OF THE

Institute

STATEN ISLAND ASSOCIATION

OF ARTS AND SCIENCES

FORMERLY

THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND

VOLUME II

OCTOBER, 1907—MAY, 1909

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS

PUBLICATION COMMITTEE

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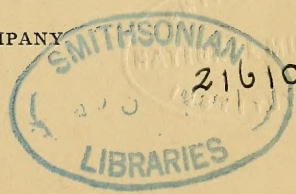


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[Formerly THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

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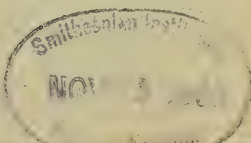
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[Issued October 17, 1908]
THE NEW ERA PRINTING COMPANY
LANCASTER, PA.



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VOL. II	OCTOBER, 1907-JANUARY, 1908	PART I
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The Seventeen-Year Cicada on Staten Island in 1907¹

BY WM. T. DAVIS

In 1890 two imago seventeen-year cicadas, *Cicada septendecim* L., and three pupa skins were recorded from Staten Island (see *Proc. Nat. Sci. Assn. S. I.* Feb. 10, 1894). At that time there was no known brood to which these insects could be assigned. In 1898 Mr. C. L. Marlatt proposed a new nomenclature for the broods of the periodical cicada, and at the same time called attention to several broods that had remained unnumbered. In *Bulletin 18* (new series), U. S. Dept. of Agriculture, Division of Entomology, he writes as follows of Brood XV: "This brood is represented by the colony appearing at Tivoli, Dutchess County, and Galway, Saratoga County, N. Y., in June, 1890, as recorded by Prof. J. A. Lintner in his seventh report, pages 297-301. Mr. Davis records the occurrence of scattering individuals the same year on Staten Island. In a letter of June 2, 1890, Prof. J. B. Smith, New Brunswick, N. J., reports that the periodical cicada had been taken by several Newark collectors, and had also been observed at Anglesea, Cape May County."

[Vol. I, Part IV, pp. 93-136, was issued September 20, 1907.]

¹ Presented October 19, 1907.

From the records of 1890 it was to be supposed that some evidence of the small and scattered brood of the periodical cicada, now known as Number XV, would be found in 1907 on Staten Island and in neighboring parts of New Jersey. On March 31, Mr. Alanson Skinner gave me a pupa that he had found under a stone at Woodrow. On June 22 I heard several cicadas singing in the trees at Woodrow and vicinity, and found two pupa skins in an apple tree on the farm of Mr. Isaac Wort. Mr. Wort had also heard the cicadas at various times, and he presented me with a pupa which he had found some time before my visit.

The following day a cicada was heard at Watchogue at the other end of the island. Later in the summer, while with Mr. Henry Bird in the Clove Valley, we each found a pupa skin of the seventeen-year cicada. Mr. Chas. P. Benedict informs me that he found in June many pupa skins as well as fully developed cicadas at his house on Manor Road, West New Brighton. In New Jersey the seventeen-year cicada occurred at Westfield, Plainfield, and Newfoundland.

It may be seen from the foregoing that the individuals were quite numerous and no doubt sufficiently so to insure the insect's appearance in 1924.

Nests of the Barred Owl, Red-Shouldered Hawk, and Barn Owl on Staten Island in 1907¹

BY JAMES CHAPIN

I. THE BARRED OWL, *Syrnium varium*.—During the spring of 1906, I had the pleasure of watching the family affairs of a pair of barred owls at Great Kills, Staten Island, a report of which may be found in the PROCEEDINGS 1: 73. 1906. This year, 1907, I was naturally interested in the same owl home, and made similar observations on the rearing of the young. As already stated, the nest is in a hole in a pin oak, about twenty-five feet from the ground, and was reached by "shinning" up a small sapling that we placed against the oak.

My first visit in the present year, 1907, was on March 23, when the nest contained two eggs of dirty whitish color. Incubation was in progress, one adult bird sitting on the nest, as on my next two visits, March 30 and April 6. On April 13 one egg was slightly cracked, and the following day both eggs had holes in them, while the peeping notes of the birds within were plainly audible. On April 20, the two young owls were still clothed in white down, and kept their eyes securely closed. In the hole there were found also more or less mutilated remains of three starlings, a goldfinch, a female sparrow-hawk, two meadow mice, and a gray rat. I tried feeding the little owls, and discovered that they would readily gulp down small pieces of meat put into their mouths.

By April 30 the young birds kept their eyes open habitually, and the old owls had become bolder, sitting in the neighboring trees and snapping their beaks. Again I found a good supply of food on hand: three flickers, a woodcock, and a bullfrog, while some of the sparrow-hawk's feathers still remained in the nest. The characteristic banded appearance of the wings of the young owls was plainly apparent on May 5.

¹ Presented October 19, 1907.

On May 18, or in other words, about thirty-three days after hatching, one young barred owl was sitting on a dead branch outside the nest, but the other still remained inside, where some feathers of a red screech owl gave evidence of the recent bill of fare. The next day the venturesome owlet was discovered in a tree about fifty feet away, though the timid one was still content to stay at home. Since the day before, it had evidently been fed on a bluejay, whose feathers lay in the nest. On June 1 I again climbed the tree, but found the hole empty and without any additional remains of prey.

Meanwhile, my interest fully aroused, I had not been content with observing a single nest of "hoot owls," but kept my eyes and ears on the alert for more. On April 13 I was rewarded by finding another nest in a large dead tree near Richmond Hill, Staten Island; but as an ascent of the tree presented great difficulty I was content, for a time, to find a piece of white egg-shell at its base. On April 14 the owl was again in its nest, and two days later I climbed an adjoining tree, from which I could see two fledgeling owls in the nest. On April 27 I made a desperate effort, got up the tree, and found, besides the young owls, which seemed about three weeks old, an addled egg and a lot of feathers of flickers, which appear to be a favorite article of food with barred owls. On May 11, my last visit, I contented myself with a view from the adjoining tree, and the growing owls seemed to be progressing favorably.

My third barred owls' nest was in a hole near the top of a dead pin oak at Woodrow, which had been pointed out to me by Mr. Isaac Wort during the preceding winter. As early as March 3 I had seen a barred owl sitting at the entrance of it; but though we kicked the base of the tree several times during April we could not scare out the bird. On April 27 I decided to risk climbing, and when I had proceeded about fifteen feet upwards, out flew the crafty old owl. After a narrow escape from falling I finally reached the nest, about a foot and a half deep and containing one young owl, evidently about two and a half weeks old, and the usual flicker feathers. On May

19 I saw one of the parents near the nest, and I hope that its only offspring safely reached maturity.

A fourth pair of barred owls was located by Mr. Wort at Green Ridge, and we found some eggshells of the previous year under a tree; still we failed to find their present abode, for the old nest is now occupied by a colony of bees. At several other localities, notably Willow Brook, I am certain there must be barred owls breeding, but proof of these suppositions must wait until next year.

During the breeding season at least, barred owls certainly eat numbers of birds, as might be expected from the abundance of migrants at that season; but it is true also that small mammals, swallowed with the hair on, do not leave such conspicuous traces as the feathers of birds. Thus it is possible that in the food of the young owls, small mammals may constitute a higher percentage than one would suppose. The variety of animals eaten by barred owls is well illustrated by the following list of carcasses found in the nest at Great Kills by Mr. Howard Cleaves on April 25, 1907: three meadow mice, one rat, a starling, two garter-snakes, a frog, and an eel. We notice with satisfaction that they have taken kindly to the starling.

Crows are inveterate enemies of barred owls, for some inscrutable reason, and will gather in numbers to attack them whenever possible, so that the presence of an owl may often be known by the disturbance among the crows.

2. THE RED-SHOULDERED HAWK, *Buteo lineatus*.—Just as every pretentious patch of woodland in our vicinity may be said to have its resident pair of barred owls, so also it has its red-shouldered hawks, the work of one by night supplementing that of the other by day. This year we succeeded in finding four nests out of ten or twelve red-shouldered hawks, which, according to careful estimate, must still breed on Staten Island.

It seemed therefore very natural that the first hawks' nest should be found near the first barred owls' nest, at Great Kills. April 6, 1907, I noticed a nest in the crotch of a large pin oak, about fifty feet up. On the ground beneath lay a few fresh pine

twigs, and on climbing up I found a practically complete, but empty, red-shouldered hawks' nest. On the 13th and 14th I visited it but found no bird on it, though the hawks were in the vicinity and were very noisy. On April 20 I again climbed up, to find the nest lined with pine and cedar twigs and containing two eggs, of a dull white ground color with brownish spots. The bird that had been sitting on the nest was in the streaked immature plumage of the species. Before I paid my next visit, April 30, a third egg had been added to the set, and the top of the nest, as well as a great many of the branches around it, had caught the white fluffy down-feathers from the old hawks. The eggs were still unhatched on May 5 and 19, and on the latter date the nest was decorated with a few leafy twigs from deciduous trees. At length, on the first of June, I found the grayish white young hawks in the nest, which was again ornamented with green leaves, and on the edge of the nest I found a mole. The branches beneath the nest were spattered with white excrement, a prominent feature about most red-shouldered hawks' nests after the young are hatched.

A second red-shouldered hawks' nest was located on April 13, about thirty feet from the ground, in a white oak in another patch of woods near Great Kills. When I first climbed up to it, April 20, there were already three eggs, and a few cedar twigs in this instance had been used in lining the nest. On May 5 two of the eggs had already hatched, disclosing the usual downy white birds, with egg teeth on their bills, and the third egg had a hole in it, through which another chick could be seen. Six days later, when two of the young hawks still showed their white egg teeth, I made the following notes of their color. The down was slightly buffy, the cere bright yellow, rims of eyelids greenish, iris brown, bill horn blue, and feet pale yellow. By June 1 there were large patches of dark feathers on them, but they were still unable to fly. The nest was lined with fresh leafy oak twigs, and contained some of the feathers of a scarlet tanager and a vireo. This was the last visit I was able to make to the nest, but I took one of the young hawks home, photographed it, and finally made it into a study specimen.

In the meantime I had found a third nest at Eltingville, about forty feet up in a chestnut tree. This nest, on April 20, contained three eggs, and was lined with pine twigs. The bird sitting on it was in full adult plumage. By May 5 some cedar twigs had been added to the lining, but the eggs had not yet been hatched. On May 19 there were three young hawks covered with fluffy white down, and the nest was decked with twigs of a maple, an oak, and a black birch.

On June 1, while I was coming through the woods toward the nest but was still forty or fifty feet away from the tree, one of the adult hawks, without making a sound, swooped down at me, passing about five feet overhead. On climbing up to the nest I found it again lined with fresh twigs, and two of the young birds becoming alarmed uttered screams very similar to those of their parents. They were now somewhat over three weeks old, and dark feathers were appearing on the sides of their breasts, in the scapulars, and among the wing coverts, while their wing and tail quills were about two and a half inches in length. In the nest were feathers from a young chicken and a scarlet tanager.

A fourth nest was discovered by Mr. Isaac Wort at Woodrow, May 19, 1907, situated about thirty-five feet from the ground in a pin oak. Though I was present, I did not have time, either just then or later, to climb the tree; but Mr. Wort subsequently reported that he had seen the young hawks perched outside the nest when they were about to leave it.

Beside finding these four nests, we also located several other pairs of the same hawk, evidently breeding, at Todt Hill, Willow Brook, Richmond Hill, and Princes Bay. This was an easy matter on account of their conspicuous circling and screaming in the early spring. From the few remains found of their prey it would seem that the red-shouldered hawks, like barred owls, may eat a larger number of birds in the breeding season than is usually credited to them.

3. THE BARN OWL, *Strix pratincola*. In the PROCEEDINGS 1: 84. 1906, Mr. Wm. T. Davis has recorded the breeding of a

pair of barn owls on the south side of Staten Island in 1906 and previous years. Mr. Irving said that these "monkey-faced owls" had laid two sets of eggs in one season, but this is to be doubted, especially in view of the fact that their young usually remain in or about the nest for two months.

Barn owls in this vicinity are apparently somewhat migratory, and the Staten Island birds were first noticed in the spring of 1907, on March 30. On May 5 there were three eggs on the floor of the pigeon loft where they breed. No nest was built, the eggs being deposited on the layer of rubbish, composed to a great extent of disintegrated owl pellets, which covered it. Unfortunately Mr. Galloway moved away soon afterward, and on our subsequent visits we had some difficulty in gaining admittance to the building. On July 7, however, Mr. Howard Cleaves and I were allowed to enter. One old owl and four young were in the loft, and an addled egg was discovered in the rubbish. The old owl flew out, but the young ones fought with their claws, snapped their beaks, and made a loud hissing noise. Mr. Cleaves made some fine photographs of the happy family seated on a dog house, and we departed, not to return until August 24. The young birds had then left the barn, having been last seen there, so I was told, about a week previously.

We trust, nevertheless, that no harm has come to them, and that they will continue to inhabit their pigeon loft in future years, perhaps even after the less domestic barred owl has been permanently banished from our island by real estate "improvements."

Drift Boulders from the Shore at Tottenville¹

BY ARTHUR HOLLICK

These specimens were all collected in about three hours' time without special search, on about 150 feet of the beach at the base of the bluff at Tottenville, fronting Raritan Bay. This bluff and the one at Prince's Bay are two of the most interesting Drift deposits on Staten Island, by reason of the large variety of boulders which may be found there. These particular specimens represent fossiliferous rocks of five geologic periods (Ordovician, Silurian, Devonian, Triassic, and Cretaceous) and at least ten distinct geologic horizons. Some of the fossils are species that we have found before, but others are additions to our previously published lists of Drift fossils. The additions are designated by asterisks (*).

Cretaceous. Clay iron-stone concretions	{	Molluscs	{ <i>Anomia</i> sp.* <i>Mytilus</i> sp.*
		Plants	{ Rhizomorphs. <i>Liriodendropsis simplex</i> Newb. <i>Celastrophylum elegans</i> Newb.* <i>Laurophyllum elegans</i> Hollick. <i>Cinnamomum</i> sp.*
Triassic. Shaly sandstone. Fucoid markings.			
Devonian	{	Hamilton limestone. <i>Camarotachia congregata</i> (Conr.).*	
		Schoharie grit. <i>Cyrtoceras</i> sp.*	
		Oriskany sandstone. <i>Spirifer arrecta</i> Hall or <i>arenosa</i> Conr.	
Silurian	{	L. Helderberg limestone. <i>Leptæna rhomboidalis</i> Wahl.	
		Clinton limestone?. Crustacean tracks.*	
Ordovician	{	Hudson sandstone. <i>Plectambonites sericeus</i> (Sowerby).	
		Chazy limestone. <i>Stromatopora</i> sp.*	
		Calciferous quartzite. Worm tracks.*	

¹ Presented November 16, 1907.

Nests of the Carpenter Ant¹

BY WILLIAM T. DAVIS

One day last spring, while walking through the woods at the "Old Comp" near Richmond Valley, Staten Island, I discovered a white pine tree about a foot in diameter that had been broken off five feet eight inches from the ground. Upon examination it was found that a nest of carpenter ants, *Camponotus herculeanus pennsylvanicus* De Geer, had occupied the tree; that the insects had made too many tunnels in the solid trunk; and that the tall pine, which had stood a little over sixty feet high, had been weakened in consequence and blown down by a passing storm. Thus the ants had, with the aid of the wind, destroyed their own home.

During the summer a more thorough examination of the nest was made and the trunk was sawed into several sections. For a little over four feet from the ground the ants had hollowed out the interior of the tree, leaving only paperlike partitions that could for the most part be removed with the hand. This portion of the nest was four inches in diameter. Next above this there was a constricted portion like the neck of a bottle, with only a few galleries driven into the solid wood, and just above this the galleries expanded into a wider area fifteen inches long and occupying, as in the part below, about four inches of the diameter of the tree. Above this last collection of galleries there was a single fingerlike tunnel one-half inch in diameter and eight inches long, occupying the center of the trunk. The entire nest was a little over six feet in length.

While I was sawing the log into sections, a few of the ants were found in the least damaged part of the nest, and nineteen days later an ant ran out from one of the chambers of that part of the nest that was brought home. The ants are very loth to leave their old home, as will again be noted further on.

¹ Presented November 16, 1907.

The constricted part of the nest was caused partly by the presence of a small knot, and it is quite evident that the division of the nest into what Dr. McCook aptly styles columnar and cavernous galleries was intentional on the part of the ants. In the cavernous portion there were a few vertical tunnels, often quite wide and curved somewhat with the annual rings of the tree, and these led to or through many chambers that had irregular floors and ceilings. There were sometimes also little rooms in the most unexpected places in the thickened parts between the ceiling of one of the large chambers and the floor of the one above. When the portion of the trunk containing this part of the nest was split vertically along some of the broad tunnels, projections like bay windows were revealed, having little holes in their sides leading to small chambers within.

Later a scarlet oak which contained a nest of the carpenter ant was found in the woods near Richmond. The tree was decayed near the base; it had been felled by lumbermen and had been sawed into several lengths before they came to the good portion of the trunk above the workings of the ants. With the assistance of Mr. James Chapin we sawed the logs, which were about fifteen inches in diameter, into shorter lengths, some of which we split lengthwise. As in the case of the pine tree nest, the ants had clung to their home in spite of the great disaster which had befallen them. They moved about very slowly, as it was late in the fall. When they were examined with a magnifying glass little mites were found clinging to their legs. It would appear very difficult for these mites to maintain their places considering their exposed position. This nest also consisted of a lower portion of finely drilled wood, so frail that a considerable part was removed quite easily. The largest and broadest tunnel occupied nearly the middle of the trunk and there were others within two inches of the outer bark. Probably owing to the different character of the wood, the columnar portion of the nest did not consist of paperlike partitions as in the white pine, but was carved out most thoroughly, leaving very little wood, which was also quite brittle. Dr. E. P. Felt has mentioned the different char-

acter of the workings of this ant in elm and balsam. The cavernous galleries often partly encircled the central vertical tunnel, and in some places the tunnels that ran up the tree at the outer limits of the nest would extend for comparatively long distances without any side chambers. This nest ended in the solid trunk, several of the galleries reaching nearly the same height from the ground. The tunnel occupying the center of the trunk was exceeded by one of the outer ones within one and one-half inches of the bark. There were chambers nearly at the top of the nest.

Another nest was found in the same piece of woodland, that had been maintained by the ants over thirty feet from the ground. They had a long way to go to reach their door. These ants will work in cedar, white pine, pitch pine, balsam, elm, willow, cherry, maple, hickory, and oak, and they no doubt drill their tunnels successfully in the solid wood of any other native trees.

These observations on the nests of the carpenter ant may seem to traverse well known ground. It has, however, been recently stated that this species has no definite architecture, but follows the galleries of the wood boring larvæ, merely cleaning them out, and doing little excavating on its own account. While the ants no doubt first enter the trees through some previous openings, such as the galleries made by larvæ, and at knot holes, yet from examinations of the nests mentioned in this article, it appears that the carpenter ant truly deserves its name, and is a great worker in wood.

Discovery of Lignitic and Bituminous Coal at Kreischerville¹

BY ARTHUR HOLLICK

During the past month a new excavation was made at Kreischerville, close to tide water and at a point further to the northwest than any of the older ones. The clay bed there exposed was therefore at a lower level both topographically and stratigraphically than any which we have had an opportunity to examine heretofore. It was found to be not only highly lignitic but also to contain a well defined bed of lignitic or brown coal, changed in places into a fairly good bituminous coal. The specimens collected show the transition from lignite to coal and while they are of interest to us scientifically they have no significance from the economic standpoint. In fact the relatively large amount of this material present rendered the clay valueless, and I understand that the excavation will be abandoned. We are fortunate in securing these specimens of Staten Island coal for our museum, as the opportunity may not occur again. They constitute an interesting addition to our local Cretaceous material.

¹ Presented December 21, 1907.

A Staten Island Weather Record of Sixty Years Ago¹

BY WILLIAM T. DAVIS

Mr. George Wotherspoon, a native of Scotland, was a resident of New Brighton for many years. In 1846 he lived on the Shore Road, now Richmond Terrace, in one of the houses built by the New Brighton Association. Later he owned a residence and several acres of land extending from Tompkins Avenue to what is now Stuyvesant Place and known as the Dawson property. At the time, he owned a field now occupied in part by the Corn Exchange Bank building and the buildings facing the St. George ferry.

From January 1, 1846, to May, 1852, Mr. Wotherspoon kept a record of the weather, which through the courtesy of his grandchildren, the Wardlaw family, has been placed in my hands for perusal.

The record consists of a book with pages six and two-eighths by seven and five-eighths inches. The left hand page is divided into eleven columns, giving in order the day of the month, day of the week, direction of the wind, the lowest night record of the thermometer and day readings at 8 a. m., 2 p. m., 10 p. m., and the highest in the day. The remaining three columns are devoted to barometer records. The right hand page contains general remarks, and includes during the first year a statement of the number of eggs laid by his fowls. Of these remarks January 8, 1846, is a fair sample and reads as follows:

“Morning cloudy. Evening fine. Cloudy at 10 p. m. 2 eggs.”

The weather as recorded in the remarks seems to have run on according to season with little change, as indeed we know it has done for a very long period of time, to which circumstance we no doubt owe our existence on the earth today.

In the following tables, drawn up from the record, we have

¹ Presented December 21, 1907.

included the highest and lowest temperature mentioned, though the records are sometimes incomplete, the 2 p. m. observation and the highest for the day being omitted. This was the case in the summers of 1847, 1848, and in much of 1851. Then follow for each year a few general observations that have been culled from the "Remarks." Lastly we give the "Rules for Prognosticating the State of the Weather from the Barometer," which may or may not be a summary of the observations made by Mr. Wotherspoon.

It may be noted that he was impatient for the advent of spring, and generally considered the season quite backward; also that in the record of five winters he mentions zero weather on two occasions. Our recent winters of 1903-4 and 1904-5 were much colder than any he records. However it is very interesting to get this glimpse of the past conditions on Staten Island, as for instance of the record of some of our deep snows, and when the first peach blossoms appeared in 1846.

The following are the notes from the record:

1846

Highest		Lowest	
January 2, 31	54°	January 18, 20	10°
February 11	41°	February 27	4°
March 20	60°	March 1	15°
April 21	82°	April 4, 5, 14.....	30°
May 25, 26	84°	May 12	40°
June 5, 19	88°	June 23	50°
July 11	98°	July 15, 16	56°
August 6	92°	August 4	60°
September 5	90°	September 29	47°
October 9	84°	October 23	31°
November 4	64°	November 26, 27	22°
December 3	60°	December 15	18°

February 20. Snow all night with hail and sleet. Heavy gale. Snow fifteen inches on the level.

March 14. Thunder in the night. Thick fog with rain.

March 25. Thunder.

March 27. Thunder at 3 p. m.

April 16. Backward season. Scarcely any leaves.

April 21. Blue flags. Daffodils.

April 22. Cherry blossoms open.

April 24. First peach blossoms open.

We find this note regarding the time table of the ferry at New Brighton:

To New York, 8, 11, 2, 5:20.

From New York, 9, 12, 3½.

November 29. Heavy rain, also thunder in the night. 3½ p. m. Heavy squall with hail, rain, snow, and thunder. Evening clear.

1847

	Highest		Lowest
January 1	58°	January 22	14°
February 3	50°	February 24	18°
March 25	56°	March 17	23°
April 22	77°	April 1	26°
May 29	70°	May 1	44°
June 27	80°	June 15	54°
July 7	80°	July 1	64°
August 13, 14	80°	August 19, 20, 24	63°
September 5	81°	September 16	45°
October 5	70°	October 27, 28, 29	29°
November 4, 9	74°	November 30	11°
December 11	68°	December 27	13°

[Note: The January, February, March, April, and part of May records were made at 81 Warren Street, the others at New Brighton, as formerly.]

January 5. Heavy rains in the night, concluding with a thunder squall.

April 28. Very backward season. Cherries and peaches beginning to blossom.

1848

	Highest		Lowest
January 1	56°	January 11	4°
February 21, 23	57°	February 11	10°
March 31	69°	March 16	11°
April 22	75°	April 20	33°
May 21	76°	May 1	44°
June 16	92°	June 1	44°
July 25	86°	July 17	57°
August 5	84°	August 23	58°
September 2	82°	September 23	39°

October 5	80°	October 9, 10, 11, 27	40°
November 5	58°	November 11	24°
December 19	62°	December 23, 24	18°

April 15. First apricot blossoms in the orchard.

April 17. Cherry in full bloom. (Stapleton.)

April 21. Peaches at home in full blossom.

May 20. Mosquito plague began the 19th inst. and continued three days. [This followed a period of warm weather.]

September 8. 11 p. m. Earthquake.

October 30. Heavy fog; last boat omitted on both sides [east and north shore of the Island.]

December 13. Picked ten roses in Mr. Fiedler's garden.

1849

	Highest		Lowest
January 26	56°	January 11	0°
February 11	40°	February 16, 19	6°
March 31	64°	March 4	22°
April 3, 8, 12, 26, 27.....	62°	April 16	28°
May 21, 23	84°	May 6, 7	40°
June 23	96°	June 11, 12	52°
July 13	96°	July 30	52°
August 25	90°	August 1	59°
September 17	83°	September 9, 25	50°
October 17, 22, 25.....	68°	October 31	36°
November 4	66°	November 29	28°
December 20, 22	48°	December 26	7°

January 20. Much floating ice for last fortnight.

March 18. Aurora.

April 20. A few peach blossoms, the first on young tree.

April 24. First peach blossoms at the house.

May 2. Late season; peach blossoms fully open.

1850

	Highest		Lowest
January 27	53°	January 1	13°
February 27	57°	February 5	11°
March 14	64°	March 4	16°
April 29, 30	68°	April 18	28°
May 13, 17	76°	May 12, 21	40°
June 19	90°	June 1	47°

July 30	93°	July 11	60°
August 6	83°	August 17, 19	58°
September 1, 2, 6.....	87°	September 30	45°
October 17	72°	October 30	34°
November 27	64°	November 22	27°
December 22	56°	December 24	13°

February 14. Clear; heat lightning in the evening.

April 6. Heavy fall of snow in the night with N. E. gale.

April 13. Snow and rain.

April 20. Apricot tree at home in full bloom.

April 21. Backward season; no leaves yet. Lilac leaf buds partly open.

April 25. No leaves yet, no peach blossoms.

April 26. Thick fog. Huguenot ran into a brig. Red Jacket ran ashore Governors Island.

April 27. Leaves just coming out on lilac.

April 30. Peach blossoms out. First leaves on horse chestnut.

May 2. Peach trees in full bloom. Cherries just opening.

May 5. Cherries in full bloom.

1851

	Highest		Lowest
January 16	54°	January 31	6°
February 15	58°	February 1	10°
March 31	73°	March 1	27°
April 23	71°	April 12, 14, 20	34°
May 23	74°	May 6	41°
June 27, 29	76°	June 17	50°
July 17	81°	July 5, 31	61°
August 13	78°	August 29	58°
September 11	80°	September 25	45°
October 13	68°	October 28	37°
November 21	54°	November 12	27°
December 31	54°	December 27	1°

February 9. A freezing fog.

February 18. Brilliant aurora.

April 1. Forward season. Leaves on lilac.

April 5. Early season. Apricots in full bloom. Leaves all out on the lilacs.

- April 7. Apricot blossoms open at home.
 April 12. Peach blossoms opening in the field.
 April 27. First asparagus.
 April 28. Pear tree in full blossom at home.
 September 29. Splendid Aurora 10 p. m.
 October 20. Fine weather and fresh breeze. Aurora.
 December 27. Immense quantities of ice in the bay for a week past. Huguenot's last trip 3½ p. m. from City.
 December 29. Great thaw yesterday and continues.

1852

	Highest		Lowest
January 1	46°	January 20	0°
February 11	54°	February 20	12°
March 9	64°	March 3	17°
April 16	60°	April 4	30°

January 19. Immense quantities of drift ice continues to make its appearance in the bay, interrupting navigation, and latterly large cakes of field ice threatening to close the bay entirely. Snow 12 inches and upwards in depth.

January 20. Heavy ice in the bay. Sylph landed her passengers on the eight o'clock trip at Jersey City. Thousands crossed to and from Brooklyn on the ice.

[A further note at the end of January.] Much ice in the bay since the middle of December. No boat from New Brighton for nearly a week, say from Wednesday 21 to Wednesday 28 of January.

February 1. Bay covered with ice.

February 11. Thunder at 7 a. m.

April 18. Very backward season, neither leaves nor blossoms yet open even on lilacs and apricots.

April 23. Still no leaves or blossoms, except one or two on the nectarine (wall).

April 30. Leaves and blossoms not yet out except apricots and nectarines.

RULES FOR PROGNOSTICATING THE STATE OF THE
WEATHER FROM THE BAROMETER

1. After a continuance of dry weather, if the barometer begins to fall slowly and steadily, rain will certainly ensue, but if the fine weather has been of long duration, the mercury may fall for two or three days before any perceptible change takes place, and the longer time elapses before the rain comes the longer the wet weather is likely to last.

2. Conversely, if after a great deal of wet weather with the barometer below its mean height, the mercury begins to rise steadily and slowly, fine weather will come, though two or three wet days may first elapse, and the fine weather will be more permanent in proportion to the length of time that passes before the perceptible change takes place.

3. On either of the foregoing suppositions, if the change immediately ensues on the motion of the mercury, the change will be permanent.

4. If the barometer rise slowly and steadily for two days together or more, fine weather will come though for those two days it may rain incessantly, and the reverse; but if the barometer rise for two days or more during rain, and then on the appearance of fine weather begins to fall again, that fine weather will be very transient, and vice versa.

5. A sudden fall of the barometer in the spring or autumn indicates wind, in the summer during very hot weather, a thunder-storm may be expected; in winter, a sudden fall after frost of some continuance indicates a change of wind, with thaw and rain; but in a continued frost a rise of the mercury indicates approaching snow.

6. No rapid fluctuations of the barometer are to be interpreted as indicating either dry or wet weather of any continuance; it is only the slow, steady, and continued rise or fall that is to be attended to in this respect.

7. A rise of the mercury late in the autumn after a long continuance of wet and windy weather, generally indicates a change of wind to the northern quarter and the approach of frost.

Lawrence's and Brewster's Warblers¹

BY JAMES CHAPIN

Lawrence's and Brewster's warblers are two ornithological puzzles, usually considered hybrids between the blue-winged and the golden-winged warblers, but their exact relations are still in some doubt. It has been suggested that Brewster's warbler may be only a color phase of the blue-wing, but this is not very likely. Indeed it is more probable that the case would be better explained by the theory of Mendelism.

Typical *Helminthophila* "*lawrencei*" has the yellow body color of *H. pinus*, with the black throat and cheek patches of *H. chrysoptera*, while the general color of *H. "leucobronchialis"* is gray, somewhat lighter than the *H. chrysoptera*, whose black markings about the head it lacks. Besides these typical forms, however, a number of intermediates have been found, the most common of which is a sort of Brewster's warbler with a yellow tinge on the breast.

Brewster's warbler is, in fact, much commoner than Lawrence's, and has been found breeding a number of times, usually with the blue-wing, in Massachusetts, Connecticut, and eastern New York. The nesting of Lawrence's warbler has been watched but once, in Bronx Park, where a male Lawrence's warbler was mated with a female blue-wing.

During the past year I have collected a typical male Lawrence's warbler on Staten Island, and a typical Brewster's warbler (female) in New Jersey. On May 11, 1907, I discovered the Lawrence's warbler in a field near St. Andrew's Church, at Richmond, Staten Island. It had a perfectly black throat, and the white wing-bars of the blue-winged warbler.

On July 14, 1907, at Buckabear Pond, Passaic County, N. J., while I was looking for the female of a hooded warbler, my

¹ Presented December 21, 1907.

squeaking attracted a female Brewster's warbler. It appeared to be anxious, as though bothered with family cares, but subsequent dissection showed little enlargement of the ovary. The bird has no yellow breast, and possesses the yellow wing-bars of the golden-winged warbler.

The Marble House¹

BY EDWARD C. DELAVAN, JR.

The destruction of the Hotel Castleton by fire, on the evening of November 12, 1907, led to the discovery, in the foundation, of numerous blocks of dolomite, which had been so utilized after St. Marks Hotel was demolished, about the year 1889.

St. Marks Hotel may be remembered as a square stone building with a later frame addition extending toward the south. This square stone building was formerly known as the Marble House, or as the Mansion House of Mrs. Arietta Thompson. The stone used in its construction, as the writer was informed by the late Mrs. Hannah E. Westervelt, a sister of Mrs. Thompson, was brought from the Kingsbridge quarry.

The Marble House was built for Mrs. Arietta Thompson, wife of Gilbert Livingston Thompson and daughter of Daniel D. Tompkins, and its construction was commenced probably prior to 1821. The great brownstone gate posts, two of which remain in their original location,² and the wall between them, along the northeasterly side of St. Marks Place, are probably of a date later than 1835.

This venerable building was so closely associated with the history of New Brighton, that the writer may be pardoned if he goes with some degree of detail into the events which preceded and led up to its construction.

As early as the year 1623 the locality now called Tompkinsville was known as "the watering place" (14 Col. Doc. 506). Here outward bound vessels stopped to fill their casks from the brook, which flowing from the thickly wooded hills and fed by constant springs, afforded a copious supply of cold pure water. With the progress of settlement cultivated fields began to dot

¹ Presented January 18, 1908.

² These two gate posts have since been removed.

the landscape, but axe and plow had made little inroad upon the hillsides when the British fleet entered the harbor in the summer of 1776.

The watering place lay in a tract devised in 1718 by Ellis Duxbury to the Minister Church Wardens and Vestry of St. Andrew in the County of Richmond, and later known as Duxbury Glebe. In 1765 the Church leased the glebe to Dr. John Bard of New York City for a term of fifty-four years. (D Deeds 609.)

To the west along the Kill Van Kull, the Dorland Patent lay, and it is known to have been in the possession of Solomon Comes about the year 1748 (106 N. Y. 1, 21), but his fate and the disposition made by him of his property remain undiscovered by the writer.

In 1769 John Wandell owned a five acre tract bounded on the west by the Jersey Street brook, which in later years became known as the distillery lot; also an adjoining strip thirty-five paces wide, on the opposite side of the brook, which is referred to in the mortgage made by him as the lot "whereon stands a certain bark mill and tan pits." (B Mgs. 16.) It is said that the remains of old vats have been discovered on the north side of Richmond Terrace, east of Jersey Street; Mr. John Seaton and the late Silas N. Havens having informed the writer that they had seen these uncovered when excavations were made for the buildings erected by Edward Reilly soon after the year 1869, but it is uncertain whether these were used for the purposes of a distillery, or for the earlier tannery.

The Philip Welles Patent had been partitioned by the Van Tuyl family into three longitudinal strips, of which the easternmost was purchased in 1775 by John Amerman; the middle strip was owned by Wilhelmus Vreeland, while the westernmost part had come into the possession of Hendrick Van Tuyl and Cornelius Vanderbilt. (B Mgs. 235; D Deeds 315; D Deeds 450.) The farm adjoining the Glebe on the south, fronting the bay, had been devised in 1734 by the Rev. David De Bonrepos, minister to the French congregation, to David, son of Alexander De Bonrepos.

of New York. The writer has so far failed to discover what became of David the devisee. (12 Wills 175, N. Y.) This land probably came into the possession of the Corsen family prior to the Revolution. The northern twenty acres were in possession of Derby Doyle, the ferryman, in 1770. (B Mgs. 43.)

South of the DeBonrepos farm the McLean family seemed to have occupied the land nearly if not quite down to St. Mary's Church in Clifton. (C Deeds 54.)

The invading forces disembarked on Staten Island. The territory surrounding the watering place became a great camp. (5 Harper's Enc. of U. S. Hist. 471.) Fences and standing timber were converted into firewood and building material, until bald hills surmounted by redoubts and rolling commons bare of grass alone remained. (1 Morris, 313, 314, 315.)

The close of the revolution found the two farms on the south and west in the possession of Gozen Ryerss, who was county judge from 1797 to 1802 and who sold the former, being the Derby Doyle parcel, to Abraham Van Duzer, and the latter (or all but six acres of the Dorland Patent), to Cornelius Van Buskirk. (E Deeds 367; 328.)

Under the authority of Chapter 19 of the Laws of 1799, thirty acres of land at the watering place were taken in the following year by the State of New York, in the exercise of the right of eminent domain, for the purpose of a marine hospital, and of this tract five acres were subsequently conveyed to the United States. These parcels became known as the Quarantine Ground and the United States Ground, respectively. (Map No. 1; G Deeds 379.)

At about this time Aaron Burr, actively engaged in consolidating the Bucktails of New York into the effective, if undesirable political force since known as Tammany Hall, and in ending the regime of the old landed aristocracy represented by the Clintons, found an able and ambitious lieutenant in Daniel D. Tompkins, upon whom Burr's mantle fell when he left New York after the duel with Alexander Hamilton in 1804. A judge at thirty years of age, sharing the bench with the learned James Kent, and elected governor of the State of New York in 1807, the rise of Daniel D. Tompkins was no less rapid than brilliant.

It was in the year 1807 that the Clermont made her successful trip to Albany at the rate of nearly five miles an hour. The legislature confirmed a grant to Livingston and Fulton of the monopoly of navigation in the waters of the State of New York by steam-propelled vessels. It was believed that transportation was revolutionized, and that thereafter the steamboat would afford a cheaper and more comfortable means of conveyance than the stage. The development of the railroad was not foreseen.

The war of 1812 necessitated the strengthening of the defences of New York. Some of the old revolutionary redoubts were restored and new forts were erected on Staten Island, under the personal supervision of Governor Tompkins.

Attracted by the beauty of the landscape and convinced of the accessibility of the north and east shores of Staten Island from New York by the new means of transit, Governor Tompkins in 1814 bought the Van Buskirk farm, the farm which had been conveyed by Amerman's heirs to Abraham Crocheron, and part of the Vreeland farm. (G Deeds 393, 382.)

In the same year a law was passed permitting St. Andrew's to sell the Glebe, the act reciting "that the reason of the distant situation of the said glebe from the church, it is not convenient to the minister and incumbent of said church, to occupy and improve the same himself, by reason whereof the said glebe hath got out of repair, and the wood and timber thereof has been carried off or destroyed, in consequence of which the same cannot be leased to great advantage * * *." (Chapter 15 Laws of 1814.)

Pursuant to this act the Church in 1815 conveyed to Daniel D. Tompkins all of the Glebe now lying north of the Richmond Turnpike (G Deeds 443), and a large portion of that lying south of the Turnpike. (G Deeds 396; see H Deeds 64.)

On the high hill near the middle of the Van Buskirk farm stood the redoubt which, as I have been informed by Edward C. Bridgeman, Esq., son-in-law of the late Daniel Low, a former owner of part of the property, bore the name of Fort Knyphausen. In relation to this it is important to notice that the spring in the valley below is still called the Hessian Spring. Governor Tomp-

kins chose a point just southeast of this fort as the site of the mansion which he erected, and in which he resided up to the time of his death. His house was owned and occupied for many years by the late Dr. John S. Westervelt, and was destroyed by fire in the year 1874. It stood slightly southwest of the present home of Mrs. L. Benziger on Fort Street, better known as Fort Place. The location of the old building is indicated on Plate 4, Beer's Atlas of Staten Island.

The year 1816 was marked by many important events in the History of Staten Island. On March 31, the legislature of the State of New York incorporated the "Richmond Turnpike Company", by which company the road still known as the Richmond Turnpike was laid out and opened from Arrietta Street to the new Blazing Star ferry, its purpose being to shorten the stage route between New York and Philadelphia.

On September 14, Daniel D. Tompkins acquired an interest in the steamboat monopoly of Livingston and Fulton. (Gibbons *vs.* Ogden 17 Johnson 488, 491.) In October the small tract lying in the south glebe, and bounded northerly by Arrietta Street and Richmond Turnpike, west by Sarah Ann Street, south by Van Duzer's land, and east by the Bay of New York, was divided into lots upon a map made by Uzal W. Freeman (Map No. 2). The location of Nautilus Hall is indicated on this map, and it was probably erected about this time; a triangle is also shown on which there was later erected the brick edifice of the Dutch Reformed Church which was recently torn down. Among the first grantees of the lots laid down on this map we find the names of De Forest, Murray, Van Duzer, Standerwick, Van Clief, Harcourt, Perine, Martino, Jarvis, Burger, Eddy, Guyon, Lockman, Van Beuren, and "John Gough of Albany, steward of the steamboat Richmond". (H Deeds 267.) In November Daniel D. Tompkins was elected vice president of the United States under James Monroe.

The steam ferry boat Nautilus, owned in whole or in part by Daniel D. Tompkins (Clute, 318), is said to have begun her service between Staten Island and Whitehall wharf in New York on November 29, 1817. (2 Morris 264.)

"The North Village of Tompkinsville" was laid out upon a map made by John T. Ludlam in 1819, on which map the Quarantine Ground is shown as bounded on the north by Fountain Street, probably as that street was laid out and opened under an act of the legislature of the preceding year. This street was named in honor of Garret Fountain, who had bought a piece of land bounded thereon. Its eastern end is now known as South Street. The tract so laid out on the map of 1819 was bounded on the west by Tompkins Street, and therefore lay entirely in the north glebe.

In the north section of this map we find a plot of some six or seven acres bounded north by Livingston Street, south by Thompson Street, west by Tompkins street, and easterly by the Bay of New York. This was the site of the Marble House.

In 1820 Daniel D. Tompkins was reëlected vice president of the United States.

A new map was made by John T. Ludlam in February, 1821, upon which a building is indicated as standing on the site mentioned, from which it may be inferred that the Marble House was certainly contemplated, probably commenced and possibly completed prior to that time.

Mr. Tompkins had signed and acknowledged a deed conveying the site in question to his daughter Mrs. Thompson, but, probably owing to financial embarrassments, this deed was never delivered. (*Thompson v. Hammond*, 1 Edwards Ch. 497.) During the year 1821 many judgments were entered against him, including one in favor of his father-in-law, Mangle Minthorne, for over \$25,000. In 1822 Mr. Tompkins made an assignment for the benefit of the creditors. (159 Deeds 8, N. Y.) In 1823 St. Andrew's Church foreclosed the mortgage given by Mr. Tompkins covering the north glebe, and on the foreclosure sale the property was bought in by the Church. (K Deeds, 124.)

In February 1824 the Supreme Court of the United States declared the laws of the State of New York creating a steam-boat monopoly to be unconstitutional. (*Gibbons v. Ogden*, 9 Wheaton 1.)

Mangle Minthorne died on April 20, 1824. In the following June St. Andrew's Church reconveyed the north glebe to Daniel D. Tompkins (K Deeds 383), who soon thereafter refunded to Gilbert Livingston Thompson the sum of \$2,500, which Mangle Minthorne had advanced to Arietta M. Thompson, and which had been used in the construction of the Marble House. (Thompson v. Hammond.)

Gilbert L. Thompson claimed from Daniel D. Tompkins the sum of \$16,539.92 "due for the costs and expenses and amount actually paid advanced and expended by him the said Gilbert L. Thompson, on which the said Gilbert L. Thompson had become legally liable and about the erecting building and improving a certain house, outhouses and premises thereunto belonging and situated near the Quarantine Ground of the County of Richmond."

Daniel D. Tompkins claimed that the said Gilbert L. Thompson was indebted to him for money paid, laid out and advanced and expended by him to and for Gilbert L. Thompson, or for his use or for the value or amount of property goods and chattels belonging to him, the said Daniel D. Tompkins, and by him delivered to the said Gilbert L. Thompson and not by him returned.

These conflicting claims were submitted by the parties for arbitration and the arbitrator awarded to Gilbert L. Thompson the full amount of the claim, \$16,539.92, on March 16, 1825.

Daniel D. Tompkins in the following June brought suit against Gilbert L. Thompson, and obtained an injunction, but died three days later. (3 Chancery Clerks Register 95, N. Y.)

The following notice is copied from the Evening Post of Monday, June 13, 1825.

DIED

At his residence on Staten Island, Saturday evening last after a long and painful illness, Daniel D. Tompkins Esq., late Vice President of the United States, in the 51st year of his age.

The senate of the State of New York, the corporation of the City, the judges of the different courts, the members of the New York Bar, the officers of the grand lodge, and his friends and acquaintances, are respectively invited to attend the funeral this afternoon at five o'clock, from the steamboat wharf at Whitehall. Carriages will be in waiting on the arrival of the steamboat Nautilus from Staten Island.

Mr. Tompkins left surviving him his widow Hannah, and the following named persons as his only named heirs at law:

1. Griffen Tompkins.
2. Arietta Minthorne, wife of Gilbert L. Thompson.
3. Hannah E., wife of Dr. John S. Westervelt.
4. Sarah A., who married Archibald Gordon.
5. Minthorne Tompkins.
6. Daniel H. Tompkins.
7. Susannah M., who married Richard Smith.
8. Ray Tompkins.

Upon the award of the arbitrator before mentioned, Gilbert L. Thompson obtained judgment against the administrators of the estate of Daniel D. Tompkins on March 15, 1828, for \$16,539.92 debt and \$3,250 damages and costs. (N. Y. County Clerks Judgment Docket.)

The judgment obtained by Mangle Minthorne was, at the instance of the executors of his will, received by scire facias on the 12th day of August, 1829, against the heirs and terre-tenants of Daniel D. Tompkins, and a writ of testatum fieri facias, dated the 15th of the same month, was directed to the sheriff of Richmond County, commanding him to sell all the north glebe, except a few small parcels sold by Mr. Tompkins. The sale under this execution was from time to time adjourned, until Gilbert L. Thompson procured an injunction restraining the sheriff from selling the site of the Marble House. On Jan. 4, 1830, the sheriff sold the land described in the execution, except the said site, to Charles C. Young. Stephen Cleveland, as the assignee of a junior judgment, redeemed the land so sold and received from the sheriff a deed bearing date April 5, 1831 (T Deeds, 182; V Deeds, 482), which however, expressly excepted the site covered by the injunction, by the following description, namely:

"All that certain piece or parcel of land with the building thereon, now occupied and claimed by Gilbert Livingston Thompson, which piece or parcel or land is bounded on the north by Livingston Street as laid down on the map of the lands of the late Daniel D. Tompkins known as the boundary lines between

the lands of Philip Van Buskirk and the glebe of St. Andrew's Church, on the south by Thompson Street as laid down on the same map, and on the east by the Bay of New York, containing seven acres, be the same more or less (the said grantee alleging that the said property excepted as claimed by Gilbert Livingston Thompson should have been described as claimed by Mrs. Gilbert Livingston Thompson)."

The injunction so obtained by Gilbert Livingston Thompson was subsequently dissolved, and the sheriff accordingly and on the thirtieth day of September, 1833, sold the site of the Marble House under the same execution to Minthorne Tompkins and Daniel H. Tompkins and delivered to them his certificate of sale. This certificate was, on the 21st day of October, 1834, assigned to Thomas E. Davis. (Y Deeds, 212.)

But as we have seen, Gilbert L. Thompson had recovered judgment in 1828 for over \$16,500 against the administrators of the estate of Daniel D. Tompkins. In April, 1829, he and Stephen Cleveland were appointed trustees of Mrs. Thompson's separate estate, and the aforesaid judgment was assigned to Stephen Cleveland. In July, 1829, Mr. Tompkins' assignees conveyed to Cleveland all the real estate in Richmond County assigned to them by Daniel D. Tompkins, Cleveland admitting his trusteeship for Mrs. Thompson and the assignees agreeing to credit \$2,500 on the said judgment. In September, 1835, Mrs. Thompson and her trustees conveyed the site of the Marble House to Thomas E. Davis. (Y Deeds, 212.)

A confirmatory deed had been made under the direction of the Court of Chancery by St. Andrew's Church to Mrs. Thompson's trustee, in which the antecedent proceedings were set forth with great particularity. (Y Deeds, 498.)

It may be observed that the great brown gate posts and the wall between them, stand upon the present curved line of St. Marks Place, and not upon the old straight line of Tompkins Street as laid down on the map of 1819. It may be inferred from this that they were built at a considerably later period than the house, probably after the map of the New Brighton Association was made in 1835.

From Thomas E. Davis title to the property passed to the short-lived New Brighton Association and back through foreclosure to Davis, who conveyed it to Samuel M. Fox. Subsequent owners were Theodosius O. Fowler, Victor Y. Fourgeaud and August Belmont, the latter of whom conveyed it to Cornelius Vanderbilt. It then passed into the hands of a syndicate, and was later successively sold to Frederick E. Gibert, Frederick Lachmeyer, and George C. Tallman, and passed to the latter's legal representatives on his death. The Marble House was demolished about the year 1889, in order to make room for the Hotel Castleton.

LIST OF MAPS.

1. Map of the Quarantine Ground 1799, Map No. 1. Richmond County Clerk's office.

2. "Map of a Parcel of Ground, the Property of His Exc'y Daniel D. Tompkins situated adjacent to the Quarantine Ground on Staten Island, surveyed and made October, 1816, by Uzal W. Freeman, City Surveyor." Map No. 2 (copy) R. C. C. office.

3. "Map of property situated at Staten Island, belonging to Daniel D. Tompkins, July 16, 1819. Surveyed by John T. Ludlam." In the possession of the City of New York, and filed in the Richmond Borough Hall.

4. "Map of property situated at Staten Island adjoining the Quarantine belonging to Daniel D. Tompkins, New York, February 27, 1821. Surveyed by John T. Ludlam." In the possession of Mr. Edward Wanty, St. Pauls Ave., Tompkinsville, S. I.

5. Map made under the direction of the Master in Chancery in *Lake vs. Tompkins* and *U. S. Bank vs. Tompkins* and *Van Buskirk vs. Tompkins*, 1823, by E. W. Bridges. K deeds 127, 429. Not found.

6. Map of land heretofore belonging to Daniel D. Tompkins by Edward Doughty, 1829. Y deeds 212. Not found.

7. Map signed by Thomas Lawrence, George Howard, J. S. Harrison and James Guyon. Y deeds 212. Not found.

8. "Map of Grounds situated at Tompkinsville, Staten Island, the property of Caleb T. Ward, showing the adjoining lands be-

longing to The Heirs of Daniel D. Tompkins and others, New York, February 22, 1829. Compiled from various surveys by E. W. Bridges, C. Surveyor." In the possession of Mr. Wanty. With another detailed map of a smaller part of the above, of same date, marked "A."

9. Map of property of Arietta M. Thompson, by John J. Soulé, April 26, 1834. X deeds 1. Y deeds 212. Not found.

10. "Staten Island Map of New Brighton Property, belonging to the New Brighton Association in the town of Castleton, County of Richmond, State of New York. Drawn and surveyed by J. Lyons, 1835." Map No. 12, in the Richmond County Clerk's Office.

11. "New Brighton Atlas, by J. Lyons, City Surveyor," 1835. In the possession of the Title Insurance Company of New York.

12. "Map of Edgewater and part of New Brighton, Staten Island, New York, showing old farm lines, Streets, Avenues, and lots, etc., from actual surveys from George M. Root, August, 1866." Map No. 1000 in the Richmond County Clerk's Office.

Chemical Analysis of Cretaceous Amber from Kreischerville¹

BY ARTHUR HOLLICK

Specimens of amber from the Androvette pit at Kreischerville were subjected to chemical analysis by Dr. William J. Gies of Columbia University, at my request, and he reports that the material is typical amber or succinite, so far as chemical composition is concerned. Amber oil, containing succinic acid, was obtained by destructive distillation, and a number of determinations of elementary composition yielded the following data:

Carbon	77.87
Oxygen	12.57
Hydrogen	9.11
Sulphur	0.35
Ash	0.10
	<hr/>
	100.00
Volatile matter at 100° C.	0.40
(Nitrogen and phosphorus absent.)	

which agrees with the data relating to succinite as determined by various observers.

¹ Presented January 18, 1908.

Peculiar Action of Lightning on a Maple Tree ¹

BY HOWARD H. CLEAVES

During an electrical storm which occurred during either the latter part of July or the early part of August, 1907, a maple tree in the woods at Princes Bay was struck by lightning and destroyed in a most peculiar manner. The tree stood in the midst of the woods, and there appeared to be no reason why any one of the numerous neighboring trees should not have been the unfortunate one.

At a point some fifteen or twenty feet from the ground on the trunk the bark had been torn off in a strip about ten inches wide, and a few feet below this point, clear to the ground and even out on the exposed roots, there was scarcely a remnant of bark to be found. Above the point where this bark-peeling was started not a trace of injury could be discovered, except a few broken limbs caused by the fall of the tree.

The main force of the bolt seems to have been spent on the trunk of the tree, at a point about seven feet from the ground. At this place, and for some distance above and below, the trunk was badly splintered and torn apart. A considerable amount of energy must still have remained, however, for the base of the tree had been raised several inches from the ground, and the earth for a short distance on all sides had been greatly disturbed and plowed into. The ground for a radius of at least four feet had been almost completely bared of vegetation, and pieces of the bark torn from the trunk were found at a distance of some fifteen yards.

After examination by several persons it was declared that no trace of fire anywhere on the trunk could be discovered, with the possible exception of a little strip of wood about six inches long at the very heart of the trunk, which appeared to be somewhat

¹ Presented January 18, 1908.

blackened. It was decided, however, that this was not caused by the lightning. It appeared more like a slight natural defect at the core, and was possibly caused by the exposure of the inner wood to the atmosphere, many days having elapsed between the destruction of the tree and the date when these notes were taken.

The space that had been formerly occupied by the unfortunate tree formed an open shaft to the sky. The leaves of the adjoining trees, which formed the walls of this shaft, were dead and withered. They displayed a complete fringe of blackened and curled-up foliage. The fact that these leaves were burned in this way, in the face of the apparent entire absence of all traces of fire on the tree which was struck, is rather remarkable.

Literature Relating to Staten Island

HOUGH'S HANDBOOK OF TREES¹

Two hundred and eight trees are described, with the accompanying illustrations of trunk, twigs, leaves, and fruit. The leaves and fruits are photographed against a measured background, which makes it possible to ascertain the natural size at a glance. On the tree trunks a one foot rule is displayed, so that the size is apparent there also. Other features are illustrations of leafless twigs, made from photographs taken in winter, showing the character of the bark, and photomicrographs of a transverse section of the wood in each genus, which makes comparison very interesting. Accompanying the description of each tree there is a small outline map of the area covered, the dotted portion showing the distribution of the species as far as known. The text is not given over wholly to technical description, for there may be found many sidelights of comment, and the illustrations also often include some pleasing detail that is additional to the mere matter in hand.

Of local interest are the illustrations of the following trees, the photographs for which were taken on Staten Island:

Pignut Hickory	<i>Hicoria glabra</i> (Mill.) Britt.
Small-fruited Hickory ...	<i>Hicoria microcarpa</i> (Mill.) Britt.
Black Alder	<i>Alnus glutinosa</i> (L.) Gaertn.
Blackjack Oak	<i>Quercus marilandica</i> Muench.
White Mulberry.....	<i>Morus alba</i> L.
Osage Orange	<i>Toxylon pomiferum</i> Raf.
Tulip Tree	<i>Liriodendron tulipifera</i> L.
Sweet Cherry	<i>Prunus avium</i> L.

¹ Handbook of the Trees of the Northern States and Canada, East of the Rocky Mountains. Photo-descriptive. By Romeyn Beck Hough, B.A. 8vo, pp. 470. Illustrated with 498 figures and many outline maps. Published by the author at Lowville, N. Y., 1907.

Clammy Locust.....	<i>Robinia viscosa</i> Vent.
Dwarf Sumach	<i>Rhus copallina</i> L.
Poison Sumach	<i>Rhus vernix</i> L.
Red Maple	<i>Acer rubrum</i> L.
Horse Chestnut	<i>Æsculus hippocastanum</i> L.
Hercules' Club	<i>Aralia spinosa</i> L.
Flowering Dogwood	<i>Cornus florida</i> L.
Red Ash	<i>Fraxinus pennsylvanica</i> Marsh.
Black Haw	<i>Viburnum prunifolium</i> L.
	W. T. D.

SMITH'S NEW JERSEY ENTOMOLOGICAL REPORT FOR 1906¹

In this report Dr. Smith devotes two pages to the consideration of the mosquito problem on Staten Island, giving a short history of the general plan of ditching the salt meadows under the direction of Dr. Alvah H. Doty, as well as the treatment of the inland pools infested by entirely different kinds of mosquitoes. Attention is called to the now well known fact that since this work has been undertaken, both on Staten Island and in neighboring parts of New Jersey, the mosquitoes have become much less numerous, to the great benefit of the people. The fact that we owe this benefit chiefly to the example and enterprise of Dr. Smith in his treatment of the New Jersey marshes, should not be lost sight of.

W. T. D.

WHEAT'S LIST OF LONG ISLAND SHELLS²

Although the title of this article is restricted in its scope to Long Island the opening paragraph contains the statement that "Staten Island is included in the area examined." The only species definitely mentioned, however, as coming from this locality is *Strobilops labyrinthica* Say, which is in our local list

¹Report of the Entomological Department of the New Jersey Agricultural College Experiment Station, New Brunswick, N. J., for the year 1906, by John B. Smith, Sc.D.

²List of Long Island Shells. By S. C. Wheat. *Bull. Brooklyn Conchological Club*, 1: 7-10. 1907.

under the generic name *Strobila* ("Catalogue of the Mollusca of Staten Island." Sanderson Smith. *Proc. Nat. Sci. Assn. S. I.* 1: 50. Mar. 1887. Extra No. 5).

A comparison of these two lists alone indicates that while Long Island possesses a larger number of marine forms, as might be expected from its more extensive coast line, Staten Island is richer by five species in freshwater and terrestrial forms, which is somewhat surprising in view of our more limited area and fewer ponds and streams. This comparison, however, does not set forth the full extent of this interesting fact, inasmuch as four other species from our island, included in the "Catalogue of the Binney and Bland Collection, etc." (*Bull. Am. Mus. Nat. Hist.* 14: 335-403. 1901. Reviewed in *Proc. Nat. Sci. Assn. S. I.* 9: 7, 8. 1904) are not included in this list. Mr. William T. Davis has reported also the local occurrence of *Ancylus rivularis* Say (*Proc. Nat. Sci. Assn. S. I.* 5: 19. 1896) which is not listed by Mr. Wheat. The most reasonable explanation of this phenomenon would appear to be, not that Long Island is lacking in these forms, but that we have been able to search our smaller island more thoroughly.

A. H.

THE MUSEUM AND LIBRARY OF THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES¹

A brief announcement of the transfer of the Museum and Library of the Association from the Staten Island Academy and its installation in the Borough Hall, followed by a general account of the botanical material in the museum and a list of the most important complete scientific serial publications in the library.

CAPTURE OF LAWRENCE'S WARBLER ON STATEN ISLAND²

An account of the capture of a specimen of this bird near Richmond on May 11, 1907.

¹By Charles Louis Pollard in *Torrey*, 7: 162-164. August 1907.

²By James Chapin. *Auk* 24: 343. 1907.

Records of Meetings

REGULAR MEETING, OCTOBER 19, 1907

The meeting was held at the residence of Mr. Howard R. Bayne, New Brighton.

President Howard R. Bayne in the chair.

Thirty-five members and guests were present.

The minutes of the annual meeting of May 18, 1908, were read and approved.

The following were elected to active membership: Eugene D. Alexander, Moses Altman, Edward B. Arnold, Edwin Atwell, Lloyd M. Bayne, Adelrich Benziger, Bruno Benziger, Eugene Bernheimer, William W. Bryan, Leonard J. Busby, R. Ward Carroll, Edward D. Clark, Henry G. Clement, Daniel A. Cobb, Jr., Edgar D. Coonley, David H. Cortelyou, Fred H. Cozzens, Julius Culmann, Philip R. Dean, Melvin L. Decker, Gabriel P. Dissosway, Arthur E. Dowler, A. Lincoln Eglinton, Samuel H. Evins, Edwin Flash, Jr., David H. Gildersleeve, Charles Goldberg, John D. Hage, Albert Handy, Vincent Hockmeyer, Anton W. Hoffmeyer, William H. Jackson, George K. Jenckes, T. Livingstone Kennedy, Charles Knight, C. M. Kopf, Edward M. Law, Jr., William F. Lee, James J. MacDonald, Charles A. Marshall, Charles W. McCutchen, Logan G. McPherson, William B. Moss, Fred E. Murphy, Orra E. Northrop, Edwin L. O'Bryan, Charles L. Pollard, Walter W. Price, Edward F. Raymond, Oswald D. Reich, Frank I. Rieff, Clarence I. Robinson, William A. Ross, Timothy F. Santry, Daniel Schnakenberg, H. Ernst Schnakenberg, William Seaton, Horatio J. Sharrett, William C. Smith, Robert H. Stevens, David J. Tysen, William S. Van Clief, George F. Van Dam, Rudolf van Hoesenberg, Harry G. Van Vechten, William T. Van Vredenburgh, James R. Walsh, Joseph W. Wanty, George P. Wort.

The committee on the annual prize competition for work in natural science, open only to pupils in Curtis High School, submitted the following

REPORT

The subject of competition for the school year 1906-7 was "A collection of not less than fifty native and introduced wild plants of Richmond County," under the conditions determined by the committee. These conditions may be found in the published proceedings of the meeting of May 19, 1906.

Five collections were submitted in competition, as follows:

	Total No. of Specimens	Correctly Identified	Wrongly Identified	Not Named
Harold Ludlow	75	70	4	1
Walter B. Reich	73	65	4	4
Manolo M. Wiechers ..	67	51	9	7
John Rabitte.....	}	Collections not up to the requirements.		
Erik Jensen.....				

Harold Ludlow was determined to be the successful competitor and Walter B. Reich was recommended for honorable mention.

The subject and conditions determined upon for the year 1907-8 were as follows:

SUBJECT

A collection of not less than 100 specimens of Staten Island insects, including at least 50 species and 4 orders.

CONDITIONS

1. The specimens shall be mounted and displayed in boxes or cases¹ and grouped according to their natural orders.

2. Each specimen shall be labeled, the label to include the scientific name, the common name when any such is recognized, and the locality where the specimen was collected.

3. The specimens shall be collected between July 1, 1907, and June 1, 1908, and the collection shall be completed in all details and turned in to the principal of the school on or before June —, 1908.

ARTHUR HOLLICK	} Committee.
WM. T. DAVIS	
HARRY F. TOWLE	

The President made formal announcement of the transfer of the museum and library of the Association to the room assigned by the city in the Borough Hall, and the employment of Mr. Charles Louis Pollard A.M. as curator; also that the Board of Estimate and Apportionment had approved an appropriation of \$4,000 for the furnishing and equipment of the museum.

The President then introduced Mr. Pollard, who spoke briefly on the present condition of the collections and library and outlined the general plans suggested for their future care and arrangement.

Mr. William T. Davis and Dr. Arthur Hollick referred to the death, since the last meeting of the Association, of Mr. Samuel Henshaw, one of the organizers of the Natural Science Association of Staten Island. The following sketch of Mr. Henshaw's life was read by Dr. Hollick:

Mr. Samuel Henshaw, one of the fourteen organizers of the Natural Science Association of Staten Island, on November 12, 1881, was born in Manchester, England, and died on Staten Island, July 22, 1907, in his seventy-fourth year. He came to America in 1868 to take charge of the John C. Green estate at New Brighton, in which position he remained for twenty-one years. In 1890 he began independent work as a landscape gardener and laid out a number of large estates, including those of John Doane at Thompson, Connecticut, Wm. Rockefeller in Westchester County, New York, the grounds of Vassar College, Poughkeepsie, Columbia University, the parks for Wappingers Falls, New York, the grounds of Gilbert College and the Gilbert Home at Winsted, Connecticut, the estate of Mrs. Eldridge at Norfolk, Connecticut, the Rhinelander estate, the New York Botanical Garden, and many lesser undertakings. For many years he was an active member of the Association, having served for

¹ Any collection may be displayed in one large box or case or in several small boxes or cases.

several years as treasurer, besides contributing many historical relics to our museum, and papers on botanical subjects to our PROCEEDINGS.

Appreciative articles in regard to his work as a landscape architect, gardener and horticulturist appeared in many journals, including *The Florists Exchange*, New York and Chicago, 24: 105 (July 27, 1907); *Horticulture*, Boston, 6: 121 (July 27, 1907, portrait); *Weekly Florists Review*, Chicago and New York, 20: 12-13 (July 25, 1907, portrait); *The American Florist*, Chicago and New York, 29: 61 (August 3, 1907, portrait); *Gardening*, Chicago, 15: 361 (August 15, 1907, portrait); and the *San Jose* (California) *Mercury* (July 30, 1907).

SCIENTIFIC PROGRAM

Mr. William T. Davis exhibited specimens of *Cicada septendecim* Linn., and a copy of the recently issued *Bulletin* No. 18, U. S. Dept. Agriculture, Div. Entomology, relating to the subject, and read a paper on "The Seventeen-Year Cicada on Staten Island in 1907." (Printed in full in this issue, p. 1.)

Mr. James Chapin exhibited skins of the barred owl and the red-shouldered hawk and read a paper on "Nests of the Barred Owl, Red-Shouldered Hawk, and Barn Owl on Staten Island." (Printed in full in this issue, p. 3.) Mr. Chapin also showed photographs, taken by Mr. Howard H. Cleaves, of young barn owls and red-shouldered hawks.

Dr. Arthur Hollick exhibited and described specimens of lignite and fossil plant remains from the Cretaceous clays at Kreischerville, recently collected, and stated that, in conjunction with Professor Edward C. Jeffrey of Harvard University, and with the aid of an appropriation of \$300 from the U. S. Geological Survey, special excavations were being made and a large amount of interesting material was being collected.

Dr. Hollick introduced Professor Jeffrey, who made a few brief remarks supplementary to those of Dr. Hollick.

Mr. William T. Davis exhibited two living hog-nosed snakes or spreading adders, *Heterodon platyrhinus* Latreille, and stated that of the many he had seen from the island all had been of the spotted variety. One of the snakes shown was of a uniform dull lead color on the dorsal surface and without spots. It was collected at Yaphank, Long Island. The Staten Island specimen came from the farm of Mr. Isaac Wort at Woodrow, and on July 22, 1907, had laid 23 eggs, which were also shown. The serpent had always been of a cross disposition and inclined to hiss and flatten out, whereas the Long Island individual was of a milder temperament.

Mr. John Rader exhibited a number of specimens of recently collected Drift and serpentine rocks.

Mr. Alanson Skinner exhibited and commented on a series of photographs illustrating the personal characteristics, arts, and culture of certain British East African negroes. The photographs were taken by Mr. Herbert Lang, of the American Museum of Natural History, during the Tjadar Expedition, in 1906.

The meeting then adjourned.

REGULAR MEETING, NOVEMBER 16, 1907

The meeting was held at the Staten Island Academy, New Brighton. President Howard R. Bayne in the chair.

About eighty members and guests were present.

The minutes of the meeting of October 19, 1907, were read and approved.

The following were elected to active membership: Mrs. M. M. Adams, Isaac Almstaedt, Thomas Baker, Alfred J. Barrett, Edward L. Bogert, Horace I. Brightman, Miss Bertha G. Brooks, Robert P. G. Bucklin, Miss Georgine M. W. Caldwell, Mrs. Leopold A. Camacho, Hobart Clark, John J. Collins, Clinton G. Daniels, Dwight H. Day, Harry W. Doremus, J. Sterling Drake, Charles A. Drucklieb, James Feeny, Charles F. Hart, Albert B. Hodges, Thomas Kenny, Charles R. Kingsley, George M. Lawrence, Theodore R. J. Lins, Mrs. Edward A. Low, Joseph H. Maloy, Ralph McKee, Charles E. Nifenecker, Joseph F. O'Grady, Frank R. Page, A. D. Pentz, Esle F. Randolph, Morgan M. L. Ryan, James J. Santry, John Seaton, Cornelius Shea, Mrs. William Allaire Shortt, Mrs. Frank W. Skinner, Mrs. Samuel McK. Smith, Theodore H. Spratt, Arthur O. Townsend, Clarence D. Turney, David M. Van Name, Walker Washington, Mrs. Martha J. Wilkinson, Frederick B. Woodruff, Mrs. Jessie I. Yates.

The President announced the appointment of the following Women's Auxiliary Committee, to assist in adding to the membership of the Association among the women of the island and to have charge of any social functions in connection with the meetings of the Association: Mrs. Arthur Hollick, *chairman*, Mrs. Samuel McK. Smith, Mrs. T. Livingstone Kennedy, Mrs. Frank W. Skinner, Miss Georgine M. W. Caldwell.

The President introduced Mr. Frederic W. Lucas, who read a paper describing the work of the Brooklyn Institute of Arts and Sciences, especially of the means and methods employed to enlist the interest of children and to attract the attention of casual visitors to the museum.

SCIENTIFIC PROGRAM

Dr. Arthur Hollick exhibited a series of geological specimens and read a paper on "Drift Boulders from the Shore at Tottenville." (Printed in full in this issue, p. 9.)

Dr. Hollick also presented, on behalf of Mr. Murray Androvette, a vase-shaped sandy clay concretion, obtained from an excavation in the Cretaceous deposits at Kreischerville, and presenting every appearance of an artifact.

Mr. William T. Davis exhibited and described sections of tree trunks, showing the destructive work of carpenter ants, and read a paper on "Nests of the Carpenter Ant." (Printed in full in this issue, p. 10.)

Mr. Charles L. Pollard exhibited a specimen of Georgia pine wood, stained in several colors, and discussed the value of a collection of woods

of different kinds, treated in a similar way, to illustrate the effects of various finishes and stains.

Mr. Alanson Skinner exhibited and described the several kinds of Iroquois Indian rattles; also a drum and flute.

The meeting then adjourned.

REGULAR MEETING, DECEMBER 21, 1907

The meeting was held at the Staten Island Academy, New Brighton. President Howard R. Bayne in the chair.

About thirty-eight members and guests were present.

The minutes of the meeting of November 16, 1907, were read and approved.

The following were elected to active membership: Daniel T. Cornell, Ernst Cossmann, Mrs. George W. Curtis, Mrs. Horace A. Davis, Louis Dejonge, Jr., George W. Dix, Miss Ellen M. Harris, Mrs. George F. Hicks, Edward T. Kennedy, Mrs. T. Livingstone Kennedy, John J. Kenny, Cornelius G. Kolff, Jr., John D. Leggett, John J. O'Doran, Miss Anne Rhodes, William H. Richardson, Charles W. Schutzendorf, Mrs. Louis A. Stirn, Miss Eleanor R. Tilden, John S. Warde.

The Curator announced that bids for the construction of 14 table cases and 9 upright cases for the museum had been opened in the office of the President of the Borough on December 3, and that the lowest bidder was Siegel, Cooper & Co., their figures being \$935.20 for the table cases and \$863.28 for the upright cases, or a total of \$1,798.48. He stated that the contract for construction had not yet been awarded.

SCIENTIFIC PROGRAM

Dr. Arthur Hollick exhibited specimens and read a paper on the "Discovery of Lignitic and Bituminous Coal at Kreischerville." (Printed in full in this issue, p. 13.)

Mr. William T. Davis exhibited a diary, written by the late George Wotherspoon, during the years 1846-1852, and read a paper on "A Staten Island Weather Record of Sixty Years Ago." (Printed in full in this issue, p. 14.)

Mr. James Chapin exhibited skins of Brewster's, Lawrence's, golden-winged, and blue-winged warblers, calling attention to the differences in plumage coloration and its biological significance, and read a paper on "Lawrence's and Brewster's Warblers." (Printed in full in this issue, p. 21.)

Mr. Davis remarked also on the fruit-eating habits of the English starling, *Sturnus vulgaris* L., and exhibited preserved specimens of pears from his garden and photographs of the fruit showing the destructive work of the birds.

Mr. Alanson Skinner exhibited a collection of Delaware Indian relics and implements and explained their origin and uses. The collection included a bow, arrows with twisted feathers, wooden bowl, mush scoop

and stirrer, burden strap of slippery elm bark, string of wampum, head-dress of turkey feathers with beaded band, earrings, and brooches.

Mr. John De Morgan presented a clipping from the *Yorkshire Weekly Post*, published in Leeds, England, May 25, 1907, containing an unsigned account of our local seventeen-year locust visitation in 1876.

The meeting then adjourned.

REGULAR MEETING, JANUARY 18, 1908

The meeting was held at the Staten Island Academy, New Brighton.

President Howard R. Bayne in the chair.

About forty members and guests were present.

The minutes of the meeting of December 21, 1907, were read and approved.

The following were elected to active membership: Daniel Campbell, Miss Delia Cumiskey, Rodger P. Doyle, Thomas J. Featherston, Mrs. Arthur Hollick, Mrs. George S. Humphrey, Harold W. Miller, John E. Seaton, Gerald F. Shepard, Miss Grace V. Talkington, Mrs. James R. Walsh, John J. Wood.

SCIENTIFIC PROGRAM

Dr. Arthur Hollick presented a specimen of dolomite obtained from the foundation wall of the Hotel Castleton and commented on the historical interest which it possessed, as representing a piece of the old "Marble House," which formerly occupied the site and was for a generation one of the most celebrated private mansions in the vicinity of New York.

In connection with the specimen Mr. Edward C. Delavan, Jr., exhibited a copy of a map of the property inscribed with the legend

A Map
of
Property Situated at
Staten Island
belonging to
D. D. Tompkins
July 16, 1819
Scale 80' = 1" Surveyed by
John T. Ludlam

and read a paper on "The Marble House." (Printed in full in this issue, p. 23.)

Dr. Hollick presented specimens of amber collected in the Cretaceous deposits at Kreischerville and read a paper on "Chemical Analysis of Cretaceous Amber from Kreischerville." (Printed in full in this issue, p. 34.)

Mr. David M. Van Name presented a large mass of rose quartz from New Milford, Connecticut, together with a specimen of the ground rock, and read a description of the method of grinding in order to obtain the material as a fine abrasive for the manufacture of sapolio, etc.

Mr. Thomas A. Fulton exhibited maps of Greater New York with the contours designated by different colors and lines, and commented on the significance of the elevations in connection with the water supply problem in the several boroughs.

Mr. Howard H. Cleaves exhibited photographs of a maple tree near Princes Bay, which was struck and completely destroyed by lightning last summer and read a paper on "The Peculiar Action of Lightning on a Maple Tree." (Printed in full in this issue, p. 35.)

The meeting then adjourned.

Publications of the Association

PROCEEDINGS OF THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND

These PROCEEDINGS were printed in octavo numbers, partly in leaflet and partly in pamphlet form, from November 10, 1883 to June 3, 1905, and were included in nine volumes, separately indexed, as follows:

- Volume I, pp. 74, Nov. 10, 1883—Oct. 13, 1888
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- “ VI, pp. 64, Nov. 14, 1896—Oct. 8, 1898
- “ VII, pp. 79, Nov. 12, 1898—Oct. 13, 1900
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Special No. 23, Vol. VIII, No. 25, Oct. 1903, “Supplement to Staten Island Names, Ye Olde Names and Nicknames.” Wm. T. Davis. Pamph., pp. 22 and map.

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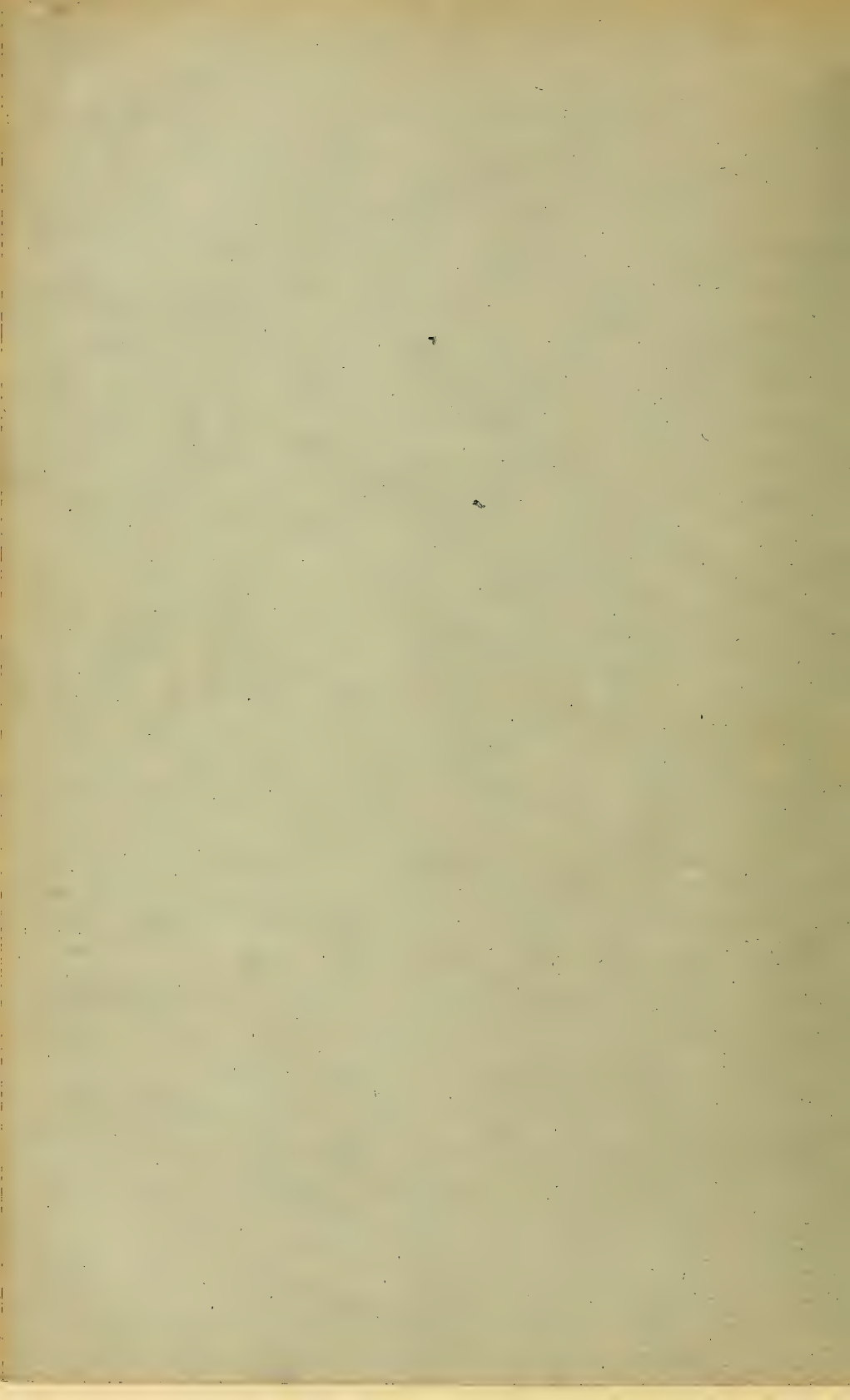
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PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION

OF

ARTS AND SCIENCES

[Formerly THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS

PUBLICATION COMMITTEE

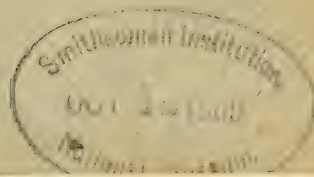
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PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION
OF
ARTS AND SCIENCES

[Formerly THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

VOL. II

FEBRUARY-MAY, 1908

PART II

Notes on New Jersey Amphibians and Reptiles¹

BY WILLIAM T. DAVIS

The Annual Report of the New Jersey State Museum for 1906 contains an interesting account of the amphibians and reptiles of that state by Henry W. Fowler of the Academy of Natural Sciences of Philadelphia. The report is well illustrated and evidently much care has been bestowed upon the text. It is of particular interest to Staten Islanders as geographically we form a part of the territory it aims to cover.

Another paper on this subject appeared in the *American Naturalist* for March, 1906, under the title of "Notes on Reptiles and Batrachians of Pennsylvania, New Jersey and Delaware," by Witmer Stone. The following notes may be of interest in connection with these two publications.

Amblystoma opacum (Gravenhorst). On September 15, 1907, I found four of these salamanders at Lakehurst, N. J., in a small barrel partly sunken in the ground on the edge of a pond. The salamanders had fallen into the barrel and were unable to get out again. This species has also been collected at Matchaponix

¹ Presented February 15, 1908.

[Vol. II, Part I, pp. 1-46, was issued October 17, 1908.]

near Jamesburg, N. J., and at Sparta, Halifax, and in the Great Swamp in the northern half of the state. It has also been found on Staten Island, though probably no more are to be collected. We have also raised it from a tadpole collected at Little Falls, N. J., March 12, 1898, and for over two years had this plump and prosperous looking individual named "Sambo" residing under a stone in a crock partly filled with damp clay. When the stone was removed and a piece of raw meat on the end of a dried goldenrod stem was presented to the creature, he took it readily enough, and the bulging eyes made a sudden dip into their sockets with the disappearance of the morsel. Sambo died in May, 1900, when he was three and one-fourth inches long.

Amblystoma punctatum (Linnæus). I have seen a considerable number of these salamanders and their milky white balls of eggs on top of the Palisades. Until lately it was also not an uncommon species on Staten Island.

Hemidactylium scutatum Tschudi. This species has been collected at Newfoundland, N. J., under a stone, and quite numerous at Suffern, N. Y., just over the northern border of New Jersey. It has also been found on Staten Island, though not in recent years.

Plethodon glutinosus (Green). We have collected this species in the Great Swamp, Morris Co., and found it abundant at Suffern on the northern border line of the state. It has also been found on Staten Island, but not recently.

Bufo lentiginosus (Shaw). The "common toad" is referred to under the name of *B. lentiginosus*. However, we can say that at Lakehurst and at other localities in the lowlands, including Staten Island, we have found the harsh-noted *Bufo fowleri* Putnam common, while at Newfoundland, N. J., fine examples of *Bufo americanus* Le Conte, a more sluggish and pleasanter voiced variety or species occurs in considerable numbers.

Scaphiopus holbrookii (Harlan). During the heavy storms of August 1 and 2, 1906, Mr. Louis H. Joutel observed many of these toads at Lakehurst, N. J., in a depression temporarily

filled with water. Their discordant notes could be heard a long distance. On July 20, 1907, I found at Lakehurst two partly grown individuals that had fallen into a cemented drain, up the steep sides of which they could not climb. On August 17 another was found in the same drain, and still another at the bottom of a shallow well that had become nearly dry. On October 12, 1907, with Professor Wm. M. Wheeler and Mr. G. P. Engelhardt, we found a somewhat larger individual in the same cement-lined drain. One of these toads was kept alive some time and fed on flies, but died after being fed on green flies. Mr. Engelhardt also had a frog die suddenly after it had devoured meat flies. The spadefoot toad has also been found on Staten Island.

Pseudacris triseriatus (Wied.). The swamp tree toad was found in considerable numbers in small pools bordering the railroad track at Singac, N. J., on March 12, 1898.

Hyla andersonii Baird. In addition to the notes on this species printed in the *American Naturalist*, it may be added that it occurs still further north than Lakehurst and Farmingdale, and has been heard by the writer at Jamesburg on the South River. Messrs. Miller, Chapin, and Skinner have found the frog at Runyon, also on the South River. It no doubt occurs as far north as the Raritan.

On the evening of July 19, 1907, I went hunting *Hyla andersonii* at Lakehurst. The first one that I heard was in a small red maple and about eight feet from the ground. This was quite high up, for they usually climb only five or six feet from the ground. I could not reach the little frog, nor could I bend the sapling that hung over a marshy place. I therefore shook it suddenly, which caused the frog to jump into a still smaller maple. This I could bend over, and it sat looking at me until I captured it with my hand.

Of quite a different disposition was the next one I found. It also was in a small maple, but when it saw me and I tried to capture it with my two insect nets, it immediately jumped and

as it was getting quite dark by that time, I was unable to locate it on the ground among the undergrowth. A little later I heard it singing again, and so went back to find that it had climbed up a huckleberry bush that was covered with a considerable growth of *Smilax glauca*. The leaves of the vine made it quite difficult to locate the frog, which must have been near, for when I drew very close it hopped on to a lower part of the bush, and though I tried to capture it with my two nets, I was unsuccessful. This frog was a most persistent singer, and so in a short time I went back to the same bush up which it had climbed after being so rudely dislodged. After much looking and with the aid of the moon, I located the frog on the flat side of a *Smilax* leaf and brought the two nets together with the result that I found the frog in one of them.

The next evening I found one in a cedar tree in a swamp. When I got around the tree through the bushes to where the frog had been, I found that it had gone to the side of the tree that I had just left. As I approached slowly it would jump from tree to tree, and from limb to limb, every now and then stopping to sing when it heard the calls of its rivals, two of which were in the same small swamp. In this way I slowly pursued the frog, being much interested in its well-founded fear and its inability to keep quiet. It never climbed over six feet from the ground so that I easily captured it when I desired.

Elaphe obsoletus (Say). The pilot black snake was found not uncommonly some years ago at Denmark Pond, near Green Pond, northern New Jersey, by Mr. Ernest F. Neilson.

Storeria occipito-maculata (Storer). Two examples of this little snake have been found at Lakehurst. One of them had fallen into the same drain that trapped the spade-foot toads, and the other had been run over by a wagon on the road.

Opheodrys æstivus (Linnaeus). A specimen of this slim little green snake was found partially coiled about a branch of a small oak at Lakehurst, July 13, 1902. Mr. Joutel and I made considerable preparations to capture it, but I finally picked it off

the scrub oak with my hand, it making hardly any effort to escape. It looked remarkably like a portion of the scrub oak, or a bit of greenbrier. It escaped twice while I had it alive as it was able to get through remarkably small holes. On one occasion I found it fast in a small hole through which it could only get the fore part of its body. There it stuck until released, and in its efforts to get away it had damaged some of its scales. Another time it succeeded in getting entirely free from its cage, and I found it tightly wound about the rounds of a chair.

Pituophis melanoleucus (Daudin). Pine snakes have been observed by Mr. C. W. Leng and myself at Lakehurst, and near Brookville. They are much hunted for their skins, which are large enough to be used in the manufacture of pocketbooks, etc. They are sold for about 40 to 50 cents each.

Lampropeltis getulus (Linnæus). Two specimens of the chain snake were found at Lakehurst, by Mr. Joutel and myself on June 30, 1907. The little one was in a decayed railroad tie, and the larger was endeavoring to burrow into the side of a cranberry bog embankment.

The large specimen was taken home alive, and on July 8 she laid 16 eggs, about which I found her coiled. Though given other snakes and toads, she refused all food. She was of a mild and placid disposition.

Agkistrodon contortrix (Linnæus). I have found the copperhead snake on the first range of mountains west of Somerville, at Green Pond, and in the mountains near the state line at Ramapo. It occurs also in considerable numbers at Newfoundland. Mr. A. Radclyffe Dugmore informed me that several had been killed near his home, and myself and friends have also found several at Newfoundland.

Crotalus horridus Linnæus. A rattlesnake was killed by berry pickers not far from Lakehurst in the summer of 1905 and brought into the village. They are reported to be more common near the Green Branch of Big Wrangel Brook. I saw a rattle-

snake on July 28, 1894, at Culver's Pond on the edge of the Kittatinny Mountains. It had been killed that day as it lay on the upper rail of an old fence.

Malaclemmys centrata concentrica (Shaw). Mr. Fowler finds the diamond-back terrapin an uncommon turtle in New Jersey, probably owing to the fact that it is so highly prized as food and the consequent persistent persecution. It is still hunted on Staten Island by a few individuals who are acquainted with its habits, and they secure a number annually. Mr. Alanson Skinner, Mr. James Chapin, and the writer have each secured living specimens taken in the salt marshes of the island, and we found a small example at the mouth of New Creek some years ago in early spring.

The Massacre of the Lenapé Indians in 1643¹

BY ALANSON SKINNER

Prior to the year 1642 the constant chafing of the Dutch and their Algonquin neighbors had been growing daily more and more unbearable owing to the high-handed and unjust bearing of the Director (Kieft), who permitted the Indians to be maltreated at the will of the colonists, and a crisis was finally reached.

A Dutch colonist, Myndert Myndertsen van der Horst, purchased (against the will of the majority of the Hackensack, a local branch of the Unami Lenapé, who held what is now Jersey City, Hoboken, Weehawken, Newark, Passaic, etc., and a part of Staten Island) a tract of land, extending, according to Reutenber, from "Archer Cul bay north towards Tappan, and included the valley of the Hackensack River. The headquarters of the settlement were about five or six hundred paces from the principal settlement of the Hackensacks." A Hackensack warrior was enticed into the settlement, made intoxicated, and, as is usual to this day when white men deal with their "inferiors," robbed of his beaver skin robe.

When the warrior recovered he went away vowing vengeance, and later returned armed with his bow and arrows. A colonist named Garret Jansen van Voorst was thatching the roof of one of the houses of the settlement, and the angry warrior shot and killed him.

The chiefs at once repaired to their stanch friend, the humane De Vries (they were afraid to visit Fort Amsterdam for fear Kieft would imprison them), and offered De Vries two hundred fathoms of wampum as blood atonement to the murdered man's family. De Vries finally persuaded the sachems to accompany him to Fort Amsterdam where they repeated their

¹ Presented February 15, 1908.

offer to the director, who refused it and demanded the murderer.

It was impossible for the chiefs to bring him in as he had fled elsewhere, and as their offer was again renewed and refused they returned with troubled minds to their homes.

In February, 1643, a party of eighty Mohicans (not Mohawks, as has often been stated) armed with rifles made a raid upon the Indians of Manhattan and above, who with the local Indians, fled to the fort for protection as they were unable to cope with an enemy bearing firearms. The Dutch cared for these fugitives for about two weeks, after which they returned to their homes, but shortly another alarm sent them running to the fort. Kieft was importuned by a committee of twelve citizens to permit them to attack the defenseless Indians. He did so as follows—"We, therefore, hereby authorize Maryn Andriansen, at his request, with his associates, to attack a party of savages skulking behind Corlear's Hook, or plantation, and act with them in such manner as they shall deem proper and the time and opportunity shall permit. Sergeant Rodolf is commanded and authorized to take under his command a troop of soldiers and lead them to Pavonia, and drive away and destroy the savages behind Jan Evertsen's, but to spare as much as possible, their wives and children, and take the savages prisoners . . . this exploit to be executed at night, with the greatest caution and prudence. Our God may bless the Expedition. Done February 24th, 1643." Ocallaghan, I: 267, 268.

De Vries did his best to stop this bloody enterprise, but without success. What followed we give in his own words (taken from the Annual Archæological Report of the Provincial Museum of Toronto for 1894-5, p. 75, where De Vries is quoted as follows):

"Anno 1643. The 22nd of February, there broke out a war among the Indians. The Mayekandus who came from Fort Orange, wanted to levy a contribution upon the Indians of Wickquasgeck and Tapaen and of the adjacent villages. There were eighty to ninety of them each with a gun on his shoulder.

There came flying to my house, four or five hundred Indians, desiring that I would protect them. I answered that I could not do it as the Indians at Fort Orange were our friends, and that we could not interfere with their wars; that I now saw that they were children, and that they were flying on all sides from eighty to ninety men where they themselves were so many hundred strong: that it was pleasing to me that they should be soldiers, as it was to mannetoe himself—that is to say the devil; but that I saw now they were only children. As my house was full of Indians, and I had only five men with me, I made ready to go to the Fort to obtain some soldiers for the purpose of having more force in my house. So I took a canoe as my boat was frozen up in the Kill, and went in the canoe or hollow tree, which is their boat, as before related, between the cakes of ice, over the river to Fort Amsterdam where I requested the Governor Kieft to assist me with some soldiers, as I was not master of my own house, because it was so full of Indians, although I was not afraid they would do any harm: but it was proper I should be master in my own house. The Governor said he had no soldiers; that I must see how it would be in the morning, and stop at night with him, which I did. The next day the Indians came in troops on foot from my house to Pavonia. . . . I spoke to some of them and they said they had all left my house.

“The 24th of February sitting at a table with the Governor, he began to state his intentions, that he had a mind to ‘wipe the mouths of the Indians.’ I answered that there was not sufficient reason to undertake it . . . but it appeared that my speaking was of no avail. He had, with his co-murderers, determined to commit the murder deeming it a Roman deed, and to do it without warning the inhabitants in the open lands, that each one might take care of himself against the retaliation of the Indians, for he could not kill all the Indians. . . . So was this business begun between the 25th, and 26th of February in the year 1643. I remained that night at the Governors, sitting up. I went and sat in the kitchen, when about midnight I heard great shrieking

. . . saw nothing but firing, and heard the shrieks of the Indians murdered in their sleep.

“ I returned to the house (again) by the fire. Having sat there a while, there came an Indian with his squaw whom I knew well, and who lived about an hour’s walk from my house, and told me that they two had fled in a small skiff, . . . that the Indians from Fort Orange had surprised them, and that they had come to conceal themselves in the fort. I told them they must go away immediately, that there was no occasion for them to come to the fort to conceal themselves; that they who had killed their people were not Indians but the Swannekens as they called the Dutch. They then asked me how they could get out of the fort. I took them to the door, and there was no sentry there, and so they betook themselves to the woods. When it was day the soldiers returned to the fort, having massacred or murdered eighty Indians, and considering they had done a deed of Roman valor, in murdering so many in their sleep: where infants were torn from their mother’s breasts, and hacked to pieces in the presence of their parents, and the pieces thrown into the fire and into the water, and other sucklings were bound to small boards, and then cut, struck, and pierced, and miserably massacred in a manner to move a heart of stone. Some were thrown into the river, and when the fathers and mothers endeavoured to save them, the soldiers would not let them come on land but made both parents and children drown—children from five to six years of age, and also some decrepit persons. Many fled from the scene, and concealed themselves in the neighboring sedge, and when it was morning came out to beg a piece of bread and to warm themselves; but they were murdered in cold blood and tossed into the water. Some came by our lands in the country with their hands, some with legs cut off, and some holding their entrails in their arms, and others had such horrible cuts and gashes that worse than they were could never happen. And these poor simple creatures, as also many of our own people did not know any better than that they had been attacked by a party of other

Indians—the Maquas. After this exploit the soldiers were rewarded for their services. . . . At another place on the same night at Corler's Hook, on Corler's plantation, forty Indians were in the same manner attacked in their sleep, and massacred there in the same manner as the Duke of Alva did in the Netherlands, but more cruelly. . . . As soon as the Indians understood that the Swannekens had so treated them, all the men whom they could surprise on the farm lands they killed; but we have never heard that they ever permitted women or children to be killed."

Wilson's Petrel in New York Harbor¹

BY JAMES CHAPIN

Wilson's petrels, *Oceanites oceanicus* (Kuhl), better known among sailors as "Mother Carey's chickens," are especially interesting in that they breed in the southern seas in January and February and then migrate to the North Atlantic, where they spend the months from May to September. They are thus of regular occurrence off our coast in summer, not infrequently visiting our harbors. Indeed, as Mr. F. M. Chapman states in his list of "The Birds of the Vicinity of New York City," they sometimes enter the Lower Bay of New York harbor in numbers.

Observations during 1905 and 1907, enable me to amplify this statement. My first experience with the petrels was in the summer of 1905, when, during early July, they were numerous in the Upper Bay, and might be watched to advantage from the Staten Island ferryboat. On several occasions, fully forty were seen during single trips across the bay. They tarried about a week, and then I saw them no more until June 22, 1907. On that date, approximately twenty-five were observed from the ferryboat in the morning; and in the afternoon, with Mr. J. T. Nichols, I counted about an equal number. The day following, Mr. Andrew Johnstone, of the American Museum, went fishing off Great Kills, in the Lower Bay, and later reported that he saw fully a hundred. For several days, until the twenty-sixth, they were seen regularly in the Upper Bay, and one still remained on July 1. They then disappeared until August 5; but from the fifth to the twelfth were again noted in varying numbers in the Upper Bay.

On the afternoon of August 6, I repaired to Great Kills and set out in a rowboat in search of petrels. A short distance

¹ Presented February 15, 1908.

outside Crooke's Point the first was encountered, and from that time till sunset they were scarcely ever out of sight. Acting on the advice of Mr. Nichols, I had provided myself with a piece of salt pork, which I cut up into small bits and threw overboard. My trouble was well repaid, and the graceful movements of the petrels as they fluttered down, pattered along the water, and seized the coveted morsels, afforded great pleasure. Several specimens were secured, which illustrated a number of interesting points. The throats of all, even those that had not partaken of my salt pork, were full of greasy liquid, evidently food; and they could expand their lower jaws somewhat as a pelican does. Their wing quills, too, were being molted. Though it was of course difficult to estimate the number of birds seen, I should suppose there were at least one hundred and twenty-five.

On August 11, Mr. R. C. Murphy followed my example, and reported the petrels as still very numerous off Great Kills, though I believe he had to go further out than I. From the twelfth to the twenty-fourth no more were seen, though Mr. Murphy and I made a trip to Great Kills especially on their account. On the twenty-fourth, however, they were very plentiful off the south shore of Staten Island, from New Creek to Princes Bay. A day later they disappeared, except for some seen on September 3 and 5 in the Upper Bay.

As a rule the petrels did not ascend the Upper Bay further than Governor's Island, though they were once observed only a few hundred yards out from the Staten Island ferry slip at the Battery. On August 6, in the Lower Bay, several were seen within a hundred yards of the shore at Oakwood, and on the twenty-fourth, though farther out, they might easily be discerned from the beach at New Dorp.

It may be well to insert a table, showing the approximate numbers observed during the summer of 1907. The record for the Upper Bay is quite complete, for I was able to note the presence or absence of petrels on almost every week-day throughout the season.

	Date		Upper Bay	Lower Bay
June	22	A. M.	25	
		P. M.	25	
	23	A. M.		about 100
	24	A. M.	25	
		P. M.	1	
	25	A. M.	3 or 4	
		P. M.	1	
July	1	A. M.	1	
August	5	A. M.	10 or 15	
		P. M.	18	
	6	A. M.	16	
		P. M.	2	about 125
	7	A. M.	45	
		P. M.	8 or 10	
	8	A. M.	4	
	11	A. M.		"very numerous"
	12	A. M.	15	
24			about 150	
25	A. M.		2 or 3	
September	3	A. M.	15	
	5	A. M.	5	
		P. M.	20 or 25	

This table shows how the petrels seemed to appear in waves, never remaining in the Upper Bay for much more than a week; and this fact suggests the question as to cause. Heavy weather is frequently given as the reason, though we have seen "Mother Carey's chickens" in the Upper Bay when a fog was the only indication of a possible storm outside the Hook; but the case of August 24 is significant. The two previous nights had, as I remember, been very stormy, and it was still drizzling on the morning of the twenty-fourth. As already stated, Wilson's petrels were very common in the Lower Bay on that date, and were seen even at Princes Bay, where Mr. Isaac Wort was camping on the beach. In the afternoon, however, the sky cleared; and the next morning Mr. Wort saw but two or three petrels, while I, during a long walk along the beach in the afternoon, noticed none at all.

In conclusion I may add that Mr. Almer Decker, of Tottenville, who has had a very long acquaintance with our Lower

Bay, also noticed the abundance of petrels in the harbor last summer. In his experience, so he told me, though they did not occur there at all regularly, they were nevertheless not uncommon but seldom came further south along the Staten Island shore than Princes Bay. About three years before last summer, however, some were observed even off Ward's Point, after a severe storm.

A Case of Involuntary Suicide¹

BY LLOYD M. BAYNE

At Intervale, our country place in the town of East Jewell, in Greene Co., N. Y., in the heart of the Catskills, a singular case of involuntary suicide happened in the summer of 1904.

A barn swallow, *Chelidon erythrogaster* (Bodd.), built its nest under the eave of the roof of a chicken house, just over a window. The dwelling house is about 75 yards from the chicken house. The bird used mud and horse hair in building the nest. Horse hair was plentiful on a fence near by, where the horses rubbed themselves and in so doing left a quantity of hair, and this no doubt helped the swallow to make its home. One day while the bird was busy about its nest it became entangled around the neck by a long strand of horse hair. Efforts to free itself were in vain. The more it struggled the tighter became the strand of hair around its neck. Exhausted by its struggles it fell outside the nest, suspended by the strand of hair, and was strangled to death.

There it hung for months. While it was hanging there no swallow or any other bird was seen to enter the nest, and the nest finally crumbled away without having any bird occupy it or visit it so far as we could see.

¹ Presented February 15, 1908.

High-Bush Blueberries¹

BY WILLIAM T. DAVIS

There are a number of cranberry bogs at Lakehurst, N. J., that have long been abandoned and are overgrown with many blueberry bushes and small white cedars. The ground being wet the prevailing blueberries are what are now specifically known as *Vaccinium corymbosum* or high-bush blueberry, and *Vaccinium atrococcum* or black fruited blueberry. These two species are recognized as desirable on account of their superior fruit, especially that of *V. corymbosum*, which is large, juicy, covered with a bloom, and quite sweet. The fruit of *V. atrococcum* is smaller, black, and not so sweet.

Asa Gray says of *V. corymbosum* in the fifth edition of his Manual: "The species exhibits the greatest variety of forms, the last of these here mentioned is the most remarkable, and the only one which has any claims to be regarded as a species." Then followed four varieties of the last of which he says: "Var. *atrococcum* has the leaves entire, downy or woolly underneath even when old, as also the branchlets; berries smaller, black, without bloom."

In the *Bulletin of the Torrey Botanical Club* 21: 24. 1894, Mr. A. A. Heller under the heading of *Vaccinium atrococcum* (A. Gray) says: "This plant, long since proved to be a very distinct species, must bear the name given above, all the others with which it has been associated at different times being homonyms."

While bushes may be found commonly on Staten Island and elsewhere, that can be immediately placed in either of these two species as at present recognized, yet there are some forms that cannot be so easily disposed of. At Lakehurst, for instance, I noticed in the latter part of July, 1907, many intermediate blue-

¹ Presented March 21, 1908.

berry bushes. The fruit had a bloom, but the berries were not so blue as in *V. corymbosum*, nor were they so large. The small and young branches of the year's growth were pubescent, as were the under sides of the leaves. I have also found on Staten Island bushes with large fruit with bloom, and pubescent leaves. From this it will appear that while it is advisable to consider the forms known as *V. corymbosum* and *V. atrococcum* as species, yet the fact that there are many bushes showing intermediate characters should not be lost sight of.

A somewhat similar case is to be noted in *Gaylussacia resinosa*, which has commonly black fruit, while in *Gaylussacia resinosa glaucocarpa* Robinson the fruit is larger and has a bloom. The variety *glaucocarpa* grows also at Lakehurst.

Notes on Some Staten Island Mammals¹

BY JAMES CHAPIN

Microtus pinetorum scalopsoides. Pine Mouse.

In the PROCEEDINGS for January, 1907, the capture of a pine mouse at Woodrow, Staten Island, by Mr. Isaac E. Wort was recorded, and it was stated that the species had hitherto been overlooked on our island. The suggestion was also made that pine mice might occur in other sandy parts of Staten Island. Up to the present time, however, we have no additional specimens except from Woodrow, where Mr. Isaac Wort and his sons have since caught about seven more.

Those now in my possession are as follows:

♀ Woodrow, Staten Island, January 6, 1907, Isaac E. Wort.

♀ Woodrow, Staten Island, March 26, 1907, Isaac E. Wort.

♀ Woodrow, Staten Island, April 8, 1907, Isaac E. Wort.

♀ Woodrow, Staten Island, May 17, 1907, George Wort.

A female with young was plowed up last spring by Mr. Wort, but was devoured by a cat before it could be sent to me; and another individual was captured and given to Mr. Wm. T. Davis.

Zapus hudsonius americanus. Jumping Mouse.

At the meeting of the Staten Island Association of Arts and Sciences in October, 1905, I exhibited a live jumping mouse, captured near the Moravian Cemetery, Staten Island, which lived subsequently in captivity until December 23, 1905. There were then but few records of jumping mice on the island, but Dr. Philip Dowell has told me that he has seen a number of them during his botanical excursions.

During the past two years I have also seen them more or less regularly, and would now feel justified in saying that they are not at all uncommon, though rather secretive. At Great Kills,

¹ Presented March 21, 1908.

Staten Island, on May 30, 1906, two were found drowned in some flooded post holes. Some other recent captures are:

♂ Woodrow, S. I., September 15, 1907, James Chapin.

♀ Lakes Id., S. I., September 18, 1907, James Chapin.

♀ Woodrow, S. I., December 22, 1907, Alanson Skinner.

♂ Woodrow, S. I., March 14, 1908, Samuel Wort.

The one found by Mr. Skinner, on December 22, 1907, was lying dead in a freshly plowed field, where it had evidently been hibernating. On March 14, 1908, Mr. Samuel Wort dug up a jumping mouse at Woodrow. It was in a round nest, made of catbrier (*Smilax*) leaves, and placed some eight or ten inches beneath the surface of the ground. The individual caught at Lake's Island, on September 18, 1907, was kept alive nearly two months. As the weather grew cold, it began to spend a large part of its time in the characteristic hibernating attitude, rolled up in a ball, with its long hind legs embracing its head, and its lengthy tail curled neatly about itself; but it died before winter had set in.

Blarina parva. Least Mole Shrew.

In March, 1905, at the meeting of the Natural Science Association, Mr. Wm. T. Davis announced that he had added another mammal to the New York State list, by finding the least mole shrew at Long Neck, Staten Island. Dr. Dowell also has a specimen from the same locality; and so I naturally concluded that they might be looked for on Lake's Island, which lies only a short distance from Linoleumville, across the Fresh Kill. It was not a great surprise, therefore, when Mr. Richard P. Smith discovered one at that place, under an old piece of tar paper, on September 15, 1907. We caught it without difficulty, and with Mr. Smith's permission I took it home, for a living specimen is generally considered somewhat of a rarity. It was a most astonishing sight to watch this little shrew attack the live crickets with which it was fed. Many of them were almost half as large as their pursuer, and they were apparently discovered almost wholly by the sense of smell, but one snap of the shrew's jaws

would settle the cricket's fate, and in a few minutes nothing would remain of it except a few of the harder parts of the shell.

Only a few days elapsed before the shrew itself died; and though I have attempted to trap some more of the same species on Lake's Island, I have secured only a couple of individuals of the larger and more abundant form, *Blarina brevicauda*, which is to be found in exactly the same situations as its diminutive congener.

Condylura cristata. Star-nosed Mole.

Attention should be called to the mention, in the PROCEEDINGS for October, 1906, of a star-nosed mole's skull that was found in a barred owl's nest at Great Kills, Staten Island. There is, I am told, but one earlier record for this peculiar mole on our island. On Long Island, too, it is rarely found, for there are as yet but two published records of its occurrence there.

Some time after the discovery of the above mentioned skull, in examining some owl pellets, I came across another skull of the same kind of mole. Unfortunately it was contained in a pellet, the history of which was lost, though I know it came from Staten Island, and probably from the south side. Recently, in some pellets picked up beneath the roost of a barred owl at Annadale, Staten Island, on March 15, 1908, I found the mandibles and humerus of a third star-nosed mole.

This evidence is quite reliable, for barred owls wander but little, and it seems to show that the star-nosed mole is not so rare on Staten Island as we supposed.

The Coot in the Vicinity of Staten Island¹

BY JAMES CHAPIN

In spite of its reputation for abundance, the coot, *Fulica americana*, seems to be found only as a rather unusual fall migrant on Staten Island, where I know of but four records of its occurrence during the past few years. The first of these was killed by Mr. G. Chauncey Parsons, at Clove Lake, October 22, 1904, but only its feet were saved for identification.

On October 15, 1905, Mr. Wm. T. Davis, Mr. Alanson Skinner, and the writer discovered a coot in a small pond at Green Ridge, Staten Island; but it refused to leave the pond, even though forced several times to take wing, and preferred to hide in the grass that fringed the shore. In rising from the water it always pattered along for a considerable distance with its feet.

The seclusive habits of this bird resemble those of other coots seen in the marshes near Newark, N. J., in June and July, 1907, by Mr. W. D. W. Miller and myself. There several pairs of coots were breeding, with the famous colony of Florida gallinules, *Gallinula galeata*, and an excellent opportunity was thus afforded for a comparison of the habits of coots and gallinules. The coots seemed slightly fonder of open water; but on the least alarm they would scuttle into the cattails, where it was useless to follow them. While swimming they could be distinguished at once from the gallinules by their shape. A gallinule would carry its tail high out of water, while the upper part of its back was almost submerged, but a coot would sit much more horizontally in the water. In addition to this, the red bills of adult gallinules, and the white bills of adult coots were visible at a considerable distance.

The two most recent examples of the coot taken on Staten

¹ Presented March 21, 1908.

Island were shot by Mr. Brinckerhoff, at Schoenian's Pond, September 29, 1907, and at Clove Lake, October 13, 1907, and were kindly presented to me. Three out of the four coots recently reported on our island were found, therefore, in the Clove Valley, and all in the fall migration. Though coots do breed as near as Newark, N. J., we could scarcely hope to have them nest on Staten Island because of the lack of any suitable locality.

Historic Maps of Staten Island¹

BY GEORGE W. TUTTLE

Three centuries ago a great love for maritime adventure was the ruling passion. The sailor was a popular idol, and the boundaries of the known world were rapidly expanding. Great commercial companies which endeavored to control the trade of the world and find a short way to the treasures of India and China, spurred on their navigators to great deeds of daring and discovery. Cabot, Frobisher, and Davis, had made fruitless searches for a northern passage to China; Hudson had already made two unsuccessful voyages for the Muscovy Company in its quest and was about to begin another for the Dutch East India Company. This latter voyage resulted in his exploration of the great river bearing his name.

The maps we are to consider take us back to about the time of this discovery which is so soon to be commemorated. At the time of Hudson's voyage, to determine their position at sea, navigators had usually only a sea compass, a cross staff similar to that shown on Map No. 3, with which they determined the latitude by an altitude of the sun or pole star, and sometimes a very imperfect chart. The log had just been introduced to determine the speed of vessels but was not in general use until many years later. Longitude, which was generally reckoned from the Grand Canary, was determined from an estimate of the distance sailed and the compass bearing. The point so located was called by one of the authors of the period the point of imagination, possibly because it so often proved to be in error. With the progress of discovery many improvements in the art of navigation were greatly needed, particularly an accurate method for the determination of longitude. To hasten its discovery Philip III

¹ Presented April 18, 1908.

of Spain offered 1,000 crowns in 1598, the States General following with an offer of 10,000 florins. It was expected at this time that longitude would be determined by the variation of the needle, which appeared to increase with regularity to the westward. One will observe that Hudson and other navigators of this time measured the variation of the needle quite frequently. The determination of longitude by lunar distance required more accurate tables of the moon than were in existence at the time, and a more accurate instrument than the cross staff with which to make the angular measurements. It was not until 1675 that the Greenwich observatory was established to advance nautical science, and not until 1731 that the sextant was invented. The improvement in the lunar tables so as to make them serviceable in longitude determinations was not effected until 1753, and Harrison's chronometer was not invented until 1761. Latitudes were therefore given on maps previous to about 1760 much more accurately than longitudes, which on account of their uncertainty were frequently omitted. Latitude and longitude, as we understand them, had been used by Europeans in map making for only about a century. The production of maps and charts had received a considerable impetus from the great amount of exploration, and some great advances had only recently been made in the projection of charts by Mercator, one of the earliest of modern cartographers. The Dutch led in these improvements as the result of the work of Mercator, Ortelius, and Hondius. The nautical maps in which the Dutch excelled at the beginning of the seventeenth century are called loxodromic or compass maps, because the courses of ships were plotted as straight lines, and distant shores were located from the courses and distances run by individual ships. At this time when so many compass lines were drawn from several points on a map, parallel rules were not in use, and the course of a ship was traced on a chart by placing one leg of a pair of compasses on the starting point and the other leg on a line which came nearest in direction to the course sailed. This leg was moved forward along the line

and the other traced the path of the ship. The manner in which the maps of the time were produced may be inferred from the appointment by public decree in 1633 of William Blaeu as cartographer to the States General; it was his duty to examine the ships' logs and so amend the maps. The Dutch cartographers were given more to embellishing their maps with fine engraving than to accurate representation, and with the seventeenth century their influence disappeared.

The maps presented herewith are a few that are original or have special interest, of the many produced since October 4, 1609, when Juet, one of Hudson's company, records that "Wee came out also of the great mouth of the great river." On account of the importance of this port and the location of Staten Island in relation thereto, at "the great mouth of the great river" perhaps quite as many maps have been made of it as of any other part of our coast. A great many Dutch charts and atlases of the seventeenth century were published, in some of which Staten Island took strange shapes and in few was it represented with any degree of accuracy.

In the following century most of the maps were of English origin and the accuracy of the representation had greatly improved as can be readily seen from those selected.

Acknowledgment is here made to the Librarian of the Lenox Branch of the New York Public Library for permission to photograph maps numbered 1, 3, 4, 5, 6, 7, 8, 10, 11, 12, and 15, as well as for assistance rendered; to the United States Coast and Geodetic Survey for map number 16; and to Mr. E. B. Johnson for the photographic work.

NO. I. A COPY OF PART OF THE MAP OF "THAT PROVINCE"
IN AMERICA MADE FOR JAMES I, KING OF ENGLAND, IN
1610, AND SENT TO PHILIP III, KING OF SPAIN, BY VELASCO,
AMBASSADOR OF SPAIN, TO ENGLAND, IN HIS LETTER OF
MARCH 22, 1611.

The letter reads in part as follows:

London, March 22nd 1611:

"Sire: — This king sent last year a surveyor to survey that Province, and he returned here about three months ago, and presented to him (King James) a plan or map of all he could discover, a copy of which I send Y. M. Whose Catholic Person," etc.

This map and other papers were copied from the Spanish Archives of Simancas for Alexander Brown; and were reproduced in his book "The Genesis of the United States" published in 1890, when this map, including the territory from Newfoundland to Virginia, was made public for the first time.

The coast in the vicinity of New York was drawn, Mr. Brown thinks, from surveys by Hudson in 1609, and Argall in 1610. This map is presented as the earliest that shows Manhattan and Staten Island. It is of further interest on account of the possibility that the part of the map including the Hudson River, and the vicinity of New York, was plotted from Hudson's surveys. An examination of the map shows that while the coast lines near New York are mapped in approximately their correct direction, the Hudson River is shown about 13 degrees to the eastward of its true northerly course. The river must have been plotted from a survey, for Verplanck's Point, Dunderberg mountain, Peekskill, West Point, Anthony's Nose, Kingston, Athens, etc., can be identified on the map by the bends in the river, which are correctly located as to latitude and distance from the Narrows. The eastward trend of the river may be explained by the use of magnetic bearings for true ones in mapping its location, and we have Hudson's observation on his way up, that the compass needle pointed 13 degrees west of north. Tradition has it that Coney Island was the place where Hudson first landed, and while one would not expect to find it located on such a map yet it is there. The Mohawk is shown branching off and connecting with a large body of water, evidently intended for Lake Ontario, which appeared on some of the maps of the time as a lake of unknown extent and considerably out of its true

position. The Hudson is mapped only a very short distance above this junction, which is plotted considerably north of its true position. Some think that a boat from the Half Moon went up to this point, but the weight of evidence tends to show that it turned back near Albany. The branching of the Mohawk and the abrupt termination of the Hudson as shown on this map can best be explained on the theory that Hudson's boat reached that place. The lake to the north and a river flowing southeasterly therefrom were shown on earlier maps, from which it is possible this northern part of the map may have been copied; or it may have been derived, as stated on the map as to certain parts thereof, from "the relations of the Indians."

The East River and Long Island Sound had evidently not been discovered when this map was made, as the land is shown unbroken on the east side of the Hudson, from the Narrows northward. If any one had attempted to follow up Hudson in the short space of time which elapsed between his return to England and the making of this map, the East River and Long Island Sound could hardly have failed of discovery. In the journal kept by Juet, one of Hudson's crew on this voyage, under date of September 3, 1609, he says: "At three of the clock in the afternoon we came to three great rivers." Historians have been in doubt as to what rivers these were, but if this map represents Hudson's impressions of the vicinity, the three rivers are evidently the Narrows, Arthur Kill, and Raritan River.

Hudson returned to England November 7, 1609. The English government forbade him to leave the country, and it was thought in June, 1610, that the English would send ships to Virginia to explore the river found by Hudson, but no such voyage is recorded. It would be expected then that the surveyor sent by the King to Virginia would have made use of all of the data collected by Hudson.

Strachey, a Virginia historian who wrote at the time, referring to Argall's voyage made from June to August, 1610, says he "made good from 44 degrees what Captayne Bartho. Gosnoll

and Captayne Weymouth wanted in their discoveries, observing all along the coast, and drawing the plotts thereof as he steered homewards into the bay." Argall's log of this voyage shows, however, that he did not approach the coast near New York either going or returning.

Dr. DeCosta in General Wilson's Memorial History of New York, has discussed this map and reaches the conclusion that it is a copy of one made in 1607, and that therefore the compiler could not have known of Hudson's voyage. If he had received any information from Hudson, the river would have been shown terminating in a shallow brook whereas the river is indicated as a strait leading to a large body of water. Further, the map contradicts Hudson who represents the Hoboken side of the river as Manna-hatta, while this map puts the name on both sides, Manahata on the west, and Manahatin on the east. Dr. DeCosta thinks it not unlikely that Hudson had a copy of this map on board the Half Moon, and states that the original could not have been drawn later than 1608. If Dr. DeCosta's ideas in the matter are correct, a tolerably accurate survey must have been made of the Hudson as far north as Albany prior to Hudson's voyage, of which survey we have a record in this map. Such a conclusion is so much at variance with the accepted facts of history that it appears on its face as improbable.

It is believed that the influence of the maps of the day were instrumental in causing the surveyor to locate the Mohawk, and the great lake to the north, as he did; since little exact knowledge in regard to them was to be obtained.

The fact that Hudson used the term Manna-hata for the west side of the river, while it appears on the map as Manahata, seems to be in favor of the theory that this part of the map was based on Hudson's discoveries rather than otherwise.

This map shows the discoveries made in Virginia by Captain Smith in 1608, prior to his departure for England, and which were not published until 1612 and so far as the writer has been

able to ascertain contains the latest and best information of the time; it is certainly more accurate than a large number of maps that have followed it, and is worthy of more study than it has received.

NO. 2. A PART OF THE "CARTE FIGURATIVE" FOUND IN THE ROYAL LIBRARY AT THE HAGUE ANNEXED TO THE MEMORIAL PRESENTED TO THE STATES GENERAL ON THE 18TH OF AUGUST, 1616. BY THE DIRECTORS OF NEW NETHERLAND.

This map is referred to in the memorial as showing the extent of the discoveries made by Cornelis Hendricxsen in a small yacht named the "Onrust" (The Restless) built in the New Netherlands.

Adrian Block was the first known European to pass through the East River. He arrived in 1613, his vessel was burned, and he spent the fall and winter of that year in building the "Onrust" a vessel of about 16 tons and 44½ feet long. Block sailed through Hellegat into the Great Bay (Long Island Sound) and explored all the region thereabouts. He left his yacht and returned home. Captain Hendricxsen in this same yacht made further explorations. Brodhead says in regard to this map that it was probably prepared under Block's immediate supervision, and from data that he furnished immediately upon his return to Holland in 1614, and that it was probably exhibited to the States General for the first time in October 11, 1614. The charter granted on that day to the Directors of New Netherland, expressly refers to a "Figurative Map prepared by them" which described the seacoasts between the 40th and 45th degrees of latitude, which this map does. It moreover shows New Netherland as lying between New France and Virginia according to the description in the charter. The map was produced probably for the second time on August 18, 1616, when the memorial was presented to which it was found attached.

This map was considered the oldest map of the State of New York, until the discovery of Map No. 1. Nieu Nederlandt appears for the first time upon a map and the first record of the name is found in the charter of 1614 above referred to. This map shows for the first time "Manhates" as an island. This is also the earliest map of the East River and Long Island Sound. The names Hellegat and Riviere vanden vorst Mauritius are respectively applied to Hell Gate and the Hudson River.

No. 3. AMERICÆ SEPTENTRIONALIS PARS A. JACOBUS 1621.

This map shows very well the style of charts used by navigators at this period when the Dutch were in the lead. The many lines in all directions were a common feature of these charts. Instead of placing a compass rose in some unimportant part of the chart, as we do at present, they drew lines in the direction of the points of the compass from many centers, so that a mariner could go almost anywhere by following one of these lines. In those days the principal nautical instruments were the cross staff, compass, and chart, all very imperfect. The cross staff, which was the predecessor of our more modern sextant, and the manner of its use in determining latitude and other nautical measurements, may be seen in the upper left hand design.

R. Achter Kol first appears on this chart as the name of the present Arthur Kill. The name Achter Kol, or Col, as it usually appears in the maps and descriptions of the period, was not applied to Arthur Kill alone but also to Newark Bay and to the territory to the west of Arthur Kill as well. When the river was meant, the name was usually given, Riviere Achter Col, or Kil Achter Col. In the Dutch language, Col used as a geographical term has the meaning of defile, strait, or pass; while Achter means behind, and Kil a narrow channel of the sea. Achter Col, therefore, meant behind or back of the strait. Col or strait in the minds of those who gave these names apparently referring to the Narrows and New York Bay.

NO. 4. CARTA PARTICOLARE DELLA NUOVA BELGIA E PARTA DELLA NUOVA ANGLIA. FROM ROBERT DUDLEY'S ARCANO DEL MARE FIORENZA 1661.

(The first edition 1647 contained the same map which was probably prepared from older maps with additions and corrections to about the year 1631.)

From the fact that Boston, which was settled in 1630, appears on the map, while there is no notice of Maryland, which was granted a charter in 1632, it seems probable that the map was made about 1631. This map is interesting chiefly on account of what is probably the first appearance of the name of this island on a map, the name I. State, being given to a small island near Sandy Hook, which has little resemblance to the real Staten Island. This map indicates, then, that the name Staten Island had been given at some time previous to 1647, and probably as early as 1631. The Dutch records prove that the name was in use in 1630, for the patent to Michael Pauw, of Staten Island, which was attested by Minuit recites: "We the Directors and Council of New Netherland, residing on the Island of Manhatus, under the jurisdiction of their High Mightinesses the Lords States General of the United Netherlands, and the General Incorporated West India Company, at their Chambers in Amsterdam; witness and declare by these presents that on this day the date under-written, came and appeared before us in their own proper persons. . . . Inhabitants, owners and heirs of the land by us (the Dutch) called the Staten Island, on the west shore of Hamels Hoofden, and declared that for and in consideration of certain parcels of goods . . . do by these presents transfer, cede, deliver and convey to and for the behoof of Mr. Michael Pauw. . . . Done at Fort Amsterdam aforesaid, in the Island of Manhatus, on the 10th day of August 1630."

The following account of New Netherlands in 1627 in a letter from Isaac de Rasures to Samuel Blommaert, found in the Royal Library at the Hague, indicates that Staten Island had no generally recognized name in 1626.

"On the 27th of July 1626 by the help of God, I arrived with the ship *The Arms* of Amsterdam before the bay of the great Mauritse River, sailing into it about a musket shot from Godyn's Point, into Coenraets Bay; then sailed on North East and North North East, to about half way from the low sand bank called Godyn's Point, to the Hamels-Hoofden, the mouth of the river.

"The West point is an island inhabited by from 80 to 90 savages, who support themselves by planting maize.

"The East point is a very large island full 24 miles long (Dutch miles—4 English geographical miles).

"The Hamels Hoofden being passed there is about a mile width in the river, and also on the West side there is an inlet where another river runs up about 20 miles to the North North East, emptying into the Mauritse River in the highlands.

"At the side of the before mentioned little river which we called *Achter Col*, there is a great deal of waste reedy land; the rest is full of trees, and in some places there is good soil, where the savages plant their maize upon which they live, as well as by their hunting.

"The other side of the same small river according to conjecture, is about 20 to 23 miles broad to the South (now Delaware) river."

It seems probable, therefore, that the name Staten Island came into use some time after this letter was written and previous to 1630.

NO. 5. NOVI BELGII, NOVAEQUE ANGLIAE NEC NON PARTIS
VIRGINIAE TABULĀ MULTIS IN LOCIS. EMENDATA A
NICOLAO JOANNIS VISSCHERO.

(Issued in 1655. This is thought to be the earliest of a number of Dutch maps copied one from the other or printed from the same plate after various alterations. The view of New Amsterdam is next to the oldest known: *Staaten Eyl.* and *Rivier Achter Kol* appear on the map.)

NO. 6. MAP IN BESCHRYVINGE VAN NIEUW NEDERLANDT.
ADRIAN VANDER DONCK, T'AMSTELDAM, 1656.

This is generally considered a copy of part of map number 5. It is the best known of this series of maps, having been reproduced in many publications.

The Beschryvinge or description mentions Staten Island and Kill van Kull as follows:

"The before mentioned bay wherein Staten Island lies is the most famous because the East and North rivers empty therein; which are two fine rivers and will be further noticed hereafter. Besides these, there are several kills, inlets and creeks, some of which resemble small rivers, as the Raritan, Kill van Col, Never-sinck, etc."

It also mentioned the watering place (shown on a map to be described later) in the following language:

"But the outward bound vessels usually stop at the watering place under Staten Island to lay in a sufficient supply of wood and water which are easily obtained at that place."

NO. 7. MAP OF STATEN ISLAND AND NEW YORK HARBOR BEING
AN INSET ON A LARGER MAP ENTITLED "A NEW MAP
OF NEW ENGLAND, NEW YORK, NEW JARSEY, PENSIL-
VANIA, MARYLAND AND VIRGINIA, BY PHILIP LEA, LONDON
1690?"

This is one of the earliest maps of Staten Island to show villages and settlements. It is a very considerable advance over the maps that preceded it, and appears to be the original upon which similar maps were based for nearly a century.

The date of this map is somewhat uncertain. The British Museum and the Congressional Library both estimate it at 1690. It was sold during quite a number of years, if we may judge by the different names printed on various copies as publisher and seller. The two copies in the Lenox Branch of the New York

Public Library are thought to have been published in 1710 and 1725. Philip Lea the maker was a geographer of prominence in his day, and published quite a number of maps dating from 1655 to 1700.

This map shows Perth City, which was the name given to the present Perth Amboy in 1684. The map could not have been made before this date, neither could it have originated many years later, for the name of Perth was soon lost by joining with it the name of the point.

The proprietaries of Perth expected to make a great city and the Surveyor General wrote home in 1683 that "workmen are scarce and many of them base; if no help comes it will be long ere Amboy be built as London is."

The settlement Wells on the map probably refers to Philip Wells land which was surveyed in 1680. The villages of Old Towne and New Towne are shown, as well as the Billop property. Dover, which appears on quite a number of maps, probably all copied from this, seems to be an error, as no other evidence of a town of this name is to be found; possibly Stony Brook is intended.

The Hudson River here appears as Hudson's River and Achter Col has been changed to Attrual Bay.

NO. 8. NEW YORK AND PERTH AMBOY HARBOR IN A MAP OF THE BRITISH EMPIRE IN NORTH AMERICA, BY HENRY POPPLE, LONDON, 1733.

This is taken from Popple's great map issued in 20 sheets under the patronage of the Lords of Trade. It seems to be original, having little in common with previous maps. Old errors have vanished and a peculiar one has been introduced; thus Billop on the previous map becomes Bill or Point on this.

It will be noticed that Staten Island is shown as a part of New Jersey.

NO. 9. A DRAUGHT OF NEW YORK FROM THE HOOK TO NEW YORK TOWN, BY MARK TIDDEMAN, IN THE ENGLISH PILOT: THE FOURTH BOOK, LONDON, 1742.

The volume from which this map was copied contains charts and sailing directions for the American coast and was used generally by navigators sailing in these waters. The English at this time were making great improvements in the art of navigation, and their charts were more complete and accurate than any others. The shore lines, soundings, etc., were no doubt the most accurate to be obtained at the time.

Several editions of the English Pilot: The Fourth Book, are available as follows:

1707 edition in Boston Athenæum. It does not contain this map.

1737 edition in Library of Congress. It contains a similar map without maker's name.

1742 edition in Library Am. Geog. Soc. which contains above map.

1758 edition in Library of Congress which contains above map.

1764 edition in New York Public Library which contains above map.

NO. 10. BAYE ET PORT D'YORC, CAPITALE DE LA NOUVELLE YORC, IN BELLIN (JACQUES NICHOLAS) LE PETIT ATLAS MARITIME, PARIS 1764.

A map probably compiled from English sources, in fact its similarity, in parts, to maps numbered 7 and 9 is apparent.

It is presented here principally on account of the name it applies to Staten Island: "Isle d'Ambois autrefois Isle des États."

A ferry is clearly shown from Staten Island to Brooklyn and the roads and ferries indicated on the map, would make it appear that transit to New York was effected via Brooklyn.

NO. 11. A CHART OF THE MOUTH OF HUDSON'S RIVER FROM SANDY HOOK TO NEW YORK, IN JEFFERY'S (THOMAS) THE AMERICAN ATLAS, LONDON, 1776.

This map shows Staten Island just prior to the breaking out of the Revolution. It may be seen that considerable pains had been taken to safeguard the entrance of the increasing volume of shipping into New York Harbor, as witness the lighthouse on Sandy Hook, first lighted in 1763, and the two alarm beacons near Coney Island.

NO. 12. PART OF SKETCH OF OPERATIONS OF HIS MAJESTIES FLEET AND ARMY UNDER THE COMMAND OF RIGHT ADMIRAL THE RIGHT HONORABLE LORD VISCOUNT HOWE AND GENERAL SIR WILLIAM HOWE, K.B., IN 1776, PUBLISHED ACCORDING TO ACT OF PARLIAMENT JANUARY 17, 1777, BY J. F. W. DES BARRES, ESQ., IN ATLANTIC NEPTUNE, VOL. 4.

This is an excellent military sketch made during the progress of the Revolution. The topographical features, hills, marshes, roads, and houses are shown with clearness.

In a later map by the same author in the Atlantic Neptune, a chart made for the use of the British Navy, published in 1779, is shown the eastern shore of Staten Island on a large scale with forts where Fort Wadsworth is now located as well as others on Pavilion Hill and Fort Hill.

NO. 13. CHART AND PLAN OF THE HARBOUR OF NEW YORK. LONDON, J. BEW, 1781.

In Political Magazine, November, 1781.

This map is of great interest on account of the number of names that appear for the first time on Staten Island, and for its indication of localities in the vicinity of New York of prominence in the Revolution.

The shore line of Staten Island is evidently copied from map No. 9.

NO. 14. A NEW AND CORRECT MAP OF THE COUNTY OF RICHMOND MADE IN THE YEAR 1797. AGREEABLE TO AN ACT PASSED BY THE LEGISLATURE OF THE STATE OF NEW YORK PASSED THE 28TH DAY OF MARCH 1797. SCALE 40 CHAINS TO AN INCH.

This map of the County of Richmond was executed in compliance with the following legislative act:

Laws of New York, Twentieth Session

John Jay, Esq., Governor

Chap LIV.

“An act in addition to an act entitled an act for the further direction of the Commissions of the Land Office and for other purposes therein mentioned

Passed the 28th March 1797.

.....

And Whereas as it will be of great utility to have the divisions of this state into counties and towns accurately delineated on a general map thereof, which cannot be done without surveys still to be made of many of them, either wholly or in part; Therefore,

Be it further enacted That the Surveyor General shall cause to be surveyed and marked such or so much of the bounds of any of the counties in this state, as have not heretofore been surveyed and marked, and that it shall be the duty of the supervisors of each town in the counties of Suffolk, Queens, Kings, Richmond, Westchester, Orange, Ulster, Dutchess, Columbia, Albany and Saratoga, to cause an accurate map to be made of the town of which he is the supervisor, and for that purpose to cause so much of the outlines of such town to be surveyed as may be necessary in addition to the surveys heretofore made, and which have

been or may otherwise be obtained, which map so made he shall on or before the first day of February next, cause to be delivered into the surveyor general's office."

.....

.....

.....

In the records of the County of Richmond are the following entries which probably refer to this map and its makers whose names do not appear thereon:

1797, Dec 14, Bernard Sprong, for making a map of the towns of Southfield and Westfield and surveying Smoking Point Road£6. 6. 0.

Richard Conner for making a map of the towns of Castleton and Northfield and service of Clerk of Supervisors.£7. 2. 0.

This map is probably the first we have, made from a land survey. It differs very little in its dimensions from later maps of Staten Island made by the United States Coast and Geodetic Survey, and shows most of the roads and buildings in existence at the time it was made. The watering place¹ mentioned by Vander Donck in his *Beschryvinge*, 1655-6 as follows: "But the outward bound vessels usually stop at the watering place under Staten Island to lay in a sufficient supply of wood and water which are

¹Director Stuyvesant in a letter to the directors in Holland, dated September 24, 1661, reports that certain persons are trying to influence the King of England to take Fort Amsterdam "by telling him that the West India Co. claims and holds this province by unlawful title because in 1623 King James had granted to the Company only a watering place on Staten Island and nothing more."

Moulton in his "History of the State of New York," 1826, says: "But the States it has been further affirmed caused an application to King James for license to erect huts for the accommodation of their fleets sailing during this period of public tranquillity to the West Indies—that the permission was granted, that the name of Staten Island or States Island arose from this incident."

easily obtained at that place," is shown on this map and can be identified as at or near Arietta street, Tompkinsville.

The large elm tree standing at the foot of New Dorp lane for many years, and well known to mariners, is here represented in the manner which was common a century ago.

The flagstaff shown on this map at Fort Wadsworth was probably used until the introduction of the electric telegraph, for the same purpose as that set up more than a century and a half before in this vicinity, of which we have the following record in De Vries, Third Voyage to America and New Netherland:

"2d of November 1641: The same day Commander Kief asked me whether I would permit Malyn to go upon the point of Staten Island where the maize land lay, saying that he wished to let him plant it and that he would make a signal by raising a flag to make known at the fort whenever ships were in the bay, to which I have consented."

Shooters Island, shown on this map as Shutters Island, is mentioned in the journal of a voyage to New York and a tour in several of the American Colonies—1679-80 by Jaspar Dankers and Peter Sluyter as follows: "Having now the tide with us we tacked about and quickly passed by the Schutters island, lying in the mouth of a kil on the north side of the Kil Achter Kol. This island is so called because the Dutch when they first settled on the North River, were in the practice of coming here to shoot wild geese, which resorted there in great numbers."

"We sailed inside Schutters island although the passage is very small, and thus obtained the inrunning current; because the flood tide which came from Achter Kol, and that from the North River strike each other here and then shoot together in this kil."

The magnetic variation shown on this chart, $3^{\circ} 45'$ west, was taken at about the time when the magnetic needle pointed nearest to the true north. Since 1797 the needle has been steadily declining to the westward until its variation amounts to about $9^{\circ} 30'$ west at the present time.

NO. 15. A PART OF MAP OF THE COUNTRY THIRTY MILES ROUND THE CITY OF NEW YORK, DESIGNED AND DRAWN BY I. H. EDDY, NEW EDITION, REVISED AND CORRECTED BY W. HOOKER AND E. BLUNT, NEW YORK, 1828.

This map shows the New Ferry and Turnpike, now known as Richmond Turnpike, as well as many names which have since disappeared.

The twin lights at Navesink Highlands are shown on this map, and these Highlands are represented as being about 600 feet above the sea level. The highest point however is only 269 feet above the level of the sea, which is below a considerable area on Staten Island where the maximum height is 413 feet.

NO. 16. MAP OF NEW YORK BAY AND HARBOUR AND THE ENVIRONS, SCALE 1/30000. UNITED STATES COAST SURVEY. WASHINGTON 1844-5.

This is one of the earliest if not the earliest map of Staten Island published by the United States Coast Survey.

The surveys for this map were executed between 1835 and 1840. It shows the roads, buildings, etc., of that time, but its chief value is due to the fact that it is the earliest map to show the shore line and the adjacent soundings with great accuracy. On this account the map is indispensable when making a study of the changes going on in the shore line, shoals, and channels. This map is in 6 sheets, 20 × 30 inches each.¹

¹Copies of the maps described in this article are now on exhibition in the Museum of the Staten Island Association of Arts and Sciences.

A Day's Collecting on a Staten Island Indian Site¹

BY WILLIAM T. DAVIS

For over two hundred years farming has been carried on on Staten Island, and it might be supposed that hardly any Indian implements could be discovered at this late day on the surface of the often plowed fields where the Indians had their village sites and grew their corn and pumpkins.

From this point of view the collection made at Mariners Harbor and Old Place becomes of interest as illustrating how much has been overlooked, and also as an incentive to further research by the hopeful archeologist. Mr. Alanson Skinner found the greater number of the implements exhibited, but fortune was kind to both of us.

Within less than twenty-five feet of the railroad station at Mariners Harbor, we found a very good mortar with worn depressions on both sides. This was brought home later as it was far too heavy to carry about, and it is remarkable that it had so long remained unobserved in its conspicuous position.

Near Western Avenue, where some trenches had been dug and the sand distributed on the surface, an axe with a groove all around, and a broken banner stone were discovered. In the adjoining plowed fields fourteen perfect arrow heads were found, as well as a few broken ones. In the same situation were discovered a skin scraper, a broken semilunar knife, a hammer stone, three sinker stones, one with a groove all around, and a pitted stone such as is often found but as to the use of which there has as yet been no very satisfactory explanation.

The broken semilunar knife is of particular interest from the fact that these implements are not often found so far south, the majority of the specimens discovered coming from New England

¹ Presented April 18, 1908.

and northern New York. Stone knives of this form closely resemble the Ulu, or woman's knife of the Eskimo, and it is supposed that the pattern has been copied from them.

In addition to all of these implements fifty-two fragments of pottery were picked up, most of which are small and many much weathered.

From the foregoing it will be seen that these old fields are still interesting to the archeologist, and that there is a never failing crop of arrow heads, fragments of pottery, and other tokens to remind one of the copper colored Staten Islanders of several hundred years ago.

A New Jersey Otter¹

BY WILLIAM T. DAVIS

While at Newfoundland, N. J., in April, 1907, I was informed that after the water had been drawn off of Brown's Pond during the winter a dead otter, *Lutra canadensis*, had been found on the bank and that it still lay where discovered. The remains were found without difficulty, and though it had been much eaten by dogs and one leg was gone, the creature was nevertheless carried away and the head preserved. The cleaned skull shows the teeth to be considerably worn and decayed in places, which would seem to indicate considerable age.

The southeasterly side of Newfoundland Mountain is a precipice, and there are many massive fragments of rock that have fallen so as to lie partly in the waters of the present artificial pond, and there form a strong retreat for an otter where he could hardly be disturbed. It has, however, been pointed out by Mr. Samuel N. Rhoads in his *Mammals of Pennsylvania and New Jersey* that even in the tide-water creeks, when the otters do not have the advantage of such a rock retreat as described, they are far from exterminated, though owing to their nocturnal habits and extreme wariness they are seldom seen even by naturalists.

¹ Presented April 18, 1908.

The Modern Museum¹

BY CHARLES, LOUIS POLLARD

The event to be celebrated on May 23 in the Borough Hall is one of great importance and significance, not only to the Association, but to the whole island community. The formal opening of Staten Island's first public museum marks the fruition of hopes which were entertained by the more sanguine members of the old Natural Science Association at the time of its foundation twenty-six years ago, but which for many years seemed destined to disappointment. We are indeed entering upon a new epoch in our history, and it is a wonderful opportunity that is presented to our grasp. I refer not merely to the educational possibilities of the new institution, or to the position it will undoubtedly assume as a center for both scientific and artistic interests. I mean the opportunity we have here to develop a museum which in proportion to its size shall take its proper place among the progressive modern museums of the country. And so, on the eve of our opening, it seems a fitting time to point out to members of the Association what the modern museum is, how it has developed, and what it accomplishes.

I do not propose to discuss the evolution of museums, as that subject has recently been treated in a masterful manner by our friend Mr. Lucas, of the Brooklyn Institute, in a small pamphlet which should be read by every one interested in this subject. He shows how three distinct types of collections have influenced the growth of our present-day institutions; the assemblage of curiosities and freaks such as were shown in Barnum's Museum and the old Boston Museum; the miscellaneous gatherings of private collectors, usually illustrating some special branch of science or art; and the systematic collections kept for study by various societies

¹ Presented May 16, 1908.

like our own. With a little thought we can readily understand how unsuited are these types of museums, if such they may be called, to modern public needs. In the case of the first two, the idea was simply one of display. Any object of interest on account of its beauty, variety, or oddity was placed on exhibition; and three-legged chickens and four-leaved clovers might find a place by the side of a stamp collection, or a pebble on which George Washington trod. As for the specimens belonging to the learned societies, they were arranged in systematic series, labeled only with data of scientific interest, and the names were of course naturally unintelligible to the ordinary individual.

Even after our larger public institutions had been founded, the idea of objects for show or display was the prevailing one, and little thought was given to arrangement or labeling. The specimens—the actual objects—were considered the important thing, and curators vied with each other in obtaining large series. At the present time, conditions are very different; and I know whereof I speak when I make the assertion that in modern museum administration, almost without exception, the proper arrangement and labeling of exhibits is regarded as of paramount importance. If you have the means to acquire abundant material, so much the better; for if not required for exhibition it will bring in good return when invested in exchanges. But even when a museum is limited by circumstances as to means and scope, like our own, there is no reason why it should not hold a position of dignity and influence simply through the proper use of its resources.

A few concrete illustrations will serve to make this point more clear. As a school boy, I was a frequent visitor at one of our largest museums. Like most boys I had a strong interest in outdoor life and was passing through the collecting fever; so I used to spend hours wandering up and down the long aisles between the cases; but I have often wondered since how those collections impressed the average adult visitor.

The birds, for example, filled a large hall. They were ar-

ranged systematically, as closely together as they could be placed, and without much regard to geographical distribution. Each specimen was perched comfortably on a nicely polished artificial pedestal. The label bore the scientific name, the locality, and the collector. That was all. Is it any wonder that most visitors, after running the eye over a case or two containing perhaps five hundred birds, passed wearily on to another hall?

Visit the same museum today, and enter the same department. The systematic collection is still there, it is true, for the benefit of students; but it contains only sufficient specimens to illustrate properly the various natural groups, and the lay visitor need not linger, for there are many more interesting features. In a number of box cases are shown the complete life histories of most of our eastern birds; the nest and the adults, and eggs, in their characteristic setting, with carefully modeled accessories; in a gallery above, even these groups are surpassed by the splendid examples installed during the past two years, contained in cases sufficiently large to include whole shrubs, trees, portions of a swamp, etc., the semicircular backgrounds being cleverly painted to give the impression of a wide panoramic view. Many rare and little known birds are shown; and the labels bear not merely the names, but contain a mass of interesting information about the bird. In yet another part of the hall is a series of cases showing the birds found around New York; these specimens are changed from time to time to correspond with the season. There are numerous other features of the exhibits which I cannot now take time to enumerate.

The policy of the modern museum is, therefore, to utilize the material at hand so that it may tell its own story and provide the proper seasoning of instruction to preserve the appetite of interest. Let me say here that the attitude of derision and sometimes of pitying contempt which is displayed by a portion of the public toward the museum curator as a man of science is distinctly unjust. He is often credited with a desire to emphasize technical matters, and is accused of ignorance as to the real needs

of the public. As a matter of fact no museum administrator, however eminent as a scientist, has been successful unless he has recognized the fact that a museum must be conducted primarily for the benefit of the people, and has studied carefully the tastes and interests of his constituency. But it does not always follow that the people should be given all they ask for. That we have several yellow journals of wide circulation is no excuse for starting another; and if the curator cannot satisfy scientific requirements and at the same time make his exhibits interesting and instructive, he had better go out of the business. At the same time the public should realize that scientific study of the collections is essential to the man of science: they are the books from which he derives whatever knowledge he may possess; and so it is that every modern museum tries to acquire a study series of its own, specimens which are not necessarily for exhibition, but which may be essential to a proper arrangement of the display series. No contributor should therefore feel sensitive or hurt because his gift does not find a place in the public cases. It may be fulfilling a far more important use in the general study collection. A curator should never place a specimen on exhibition without asking himself the reason for it. If the object is merely attractive to look at, or if it does not illustrate some fact in nature, bear some relation to surrounding exhibits or possess some historical association, should it be displayed? The answer of the modern administrator is, no. The sound philosophy of this reasoning will be apparent when we consider how quickly the mind or the eye tires of looking at a series of objects merely because they are pretty. During the past year I have spent several days in the various museums listening to the comments of visitors. In nearly every instance in which a large collection of such objects were shown without labels of special interest, the visitor would look at the first examples rather closely, indulging in the usual adjectives; would pass more quickly by the next examples; and would ignore the rest of the collection. This is especially true of biological collections.

In our own museum we are to a large extent free from this difficulty because the series of specimens are much smaller, and in most cases possess a local interest. But even here the material is to be so arranged that each object will provide its own excuse at once; it will take time and hard work to place our museum at the acme of its usefulness. Progress is the world's watchword just now; and there is no branch of knowledge in which progressive methods and modern ideals are more important than in the management of a public museum.

Annual Address of the President of the Association¹

BY HOWARD R. BAYNE

The year that closes at this meeting has been one of exceptional interest and encouragement.

In May, 1907, our membership numbered 146. We have now on our roll 308 members, of which 298 are active members, two are life members, two corresponding, two honorary, and four are patrons. Dr. Charles Conrad Abbott, of Trenton, N. J., author and naturalist, was elected corresponding member. The four patrons elected are Messrs. Arthur Hollick, James Chapin, Charles Louis Pollard, and Ignaz Matausch. This honor was conferred upon each of these gentlemen in recognition of the valuable donations presented by them to the museum and library amounting in the aggregate, upon a very moderate valuation, to over the sum of \$1,000. The accessions during the year have approximated about 6,000 to the museum and 2,000 to the library.

On July 8, 1907, the Board of Estimate and Apportionment granted the application of our association for an appropriation of \$4,000 to cover cost of exhibition cases and museum supplies. This sum became available on September 17, 1907. Plans and specifications had been prepared by Messrs. Carrère and Hastings, architects for the City of New York, and bids for construction were advertised for. The lowest bidder was the Siegel Cooper Co., to whom the contract was awarded at \$1,798.48. The cases were delivered in April, 1908.

The museum and library were transferred in July, 1907, from the room at the Staten Island Academy, where they had been stored for a number of years, to the room in the Borough Hall, which had been assigned to the use of the Association for the

¹ Presented May 16, 1908.

purpose of public exhibition by the president of the borough, Hon. George Cromwell, under the resolution of the Sinking Fund Commissioners of the City of New York. As soon as the cases were available, steps were taken to classify and arrange the museum for public exhibition.

On June 17, 1907, Mr. Charles Louis Pollard, formerly of the U. S. National Museum at Washington, was appointed curator by the Board of Trustees, and immediately entered upon his duties. The work of installing and arranging the museum specimens and the library has been accomplished by the curator with an organized staff of active members of the Association, as set forth in the report of the Board of Trustees. Other members have also rendered active assistance. To all of these gentlemen the Association is indebted for most skillful, valuable, and useful service.

In spite of the limited time at our disposal we may confidently expect a creditable showing of the museum on May 23, the date set for the public opening.

The annual prize bestowed by the Association for work in natural science, open to pupils in the Curtis High School, was awarded last June to Mr. Harold Ludlow, for the best collection of not less than fifty native and introduced wild plants of Richmond County. The prize this year will be awarded for the best collection of not less than 100 specimens of Staten Island insects, including at least fifty species and four orders. The interest which these prizes have aroused is highly satisfactory and the results attained indicate an encouraging advance in special study and accurate investigation in natural science. As soon as the funds are available similar prizes should be offered in other schools as incentives to the study of nature.

Along the line of enlarging the scope of the Association was the adoption of a new bylaw authorizing the formation of sections by the members for the discussion and study of special subjects. Under this bylaw any five or more members may with the approval of the Board of Trustees organize a section, select their

own chairman and recorder, and hold meetings at such times and places as they please. This affords opportunity for meetings and discussion in any subject within the broad scope of the Association's corporate purposes.

To the Women's Auxiliary Committee we are greatly obliged for conducting most successfully a number of social reunions of the members of the Association and their friends during the year. These gatherings have been uniformly enjoyable, and it is a matter of great regret that the local habitation of the Association is so limited as to make it difficult to accommodate our increasing membership on such occasions.

And this leads me to express the hope that the day is not far distant when the quarters of the Association will be adequate to its needs and to the dignity and worth of its ambitions. The growth of the museum has far outstripped its present facilities. We have thousands of specimens which cannot be exhibited because we have not space for them. The library has also grown beyond expectation, and will soon transcend the limit of space allotted to it.

These facts point to the inevitable necessity for larger accommodation. Just how and when these will be supplied we may not now undertake to forecast. But my confidence in the loyalty and serious purpose of the Association and the splendid zeal and fidelity and ability of my associates in the administration of our affairs, leave no doubt in my mind, at least, that in due time we shall have quite nearly all that we need.

Literature Relating to Staten Island

ARAUCARIOPITYS, A NEW GENUS OF ARAUCARIANS¹

From a study of remains obtained from the Cretaceous Staten Island deposits of the Androvette pit at Kreischerville the author bases a new genus and species, which is described and illustrated under the name *Araucariopitys americana*. The internal structure, which is well shown in the photomicrographic sections, clearly indicates araucarian affinities, but with certain characters that suggest abietinous alliances. The conclusion reached is that the genus represents an extinct type, transitional between the Abietineæ and Araucarineæ and indicating the derivation of the latter from the former.

In his concluding discussion, on p. 442, the author refers in an important connection, to "the most archaic structurally known abietinous type, *Prepinus*," but unfortunately fails to cite any authority for the name or its place of publication.

A. H.

ON THE STRUCTURE OF THE LEAF IN CRETACEOUS PINES²

This contribution consists of descriptions and discussions of specimens of Pinaceae collected in the Cretaceous clays of Staten Island at Kreischerville, together with convincing reproductions of enlarged photographs, showing exterior characters, and photomicrographs of sections showing interior structure.

A new genus, *Prepinus*, is proposed for a peculiar type, represented by short deciduous shoots, bearing numerous spirally arranged leaves, enclosed in a sheath composed of nondeciduous scales. A new species, *P. statenensis*, is described, and its structural characters discussed in connection with their significance

¹ By E. C. Jeffrey. *Bot. Gaz.*, 44: 435-444, pls. 28-30. 1907.

² By E. C. Jeffrey. *Annals Bot.* 22: 207-220, pls. 13, 14. 1908.

from the evolutionary standpoint, and is illustrated by the figures on plate 13.

Several new types of the genus *Pinus* are also described, one of which is distinguished as *P. triphylla* in the explanation of figure 17 on plate 14, and is therefore presumably to be considered and cited as a new species, under that name.

The illustrations are excellent and the author's discussions and interpretations of the facts of internal structure which they show, add much that is both new and interesting in relation to the antiquity and ancestry of the Abietineæ and the genus *Pinus*; but, unfortunately, the scientific value of the contribution is seriously marred by the lack of orderly sequence in the arrangement of descriptions, discussions, names, and references in the text, and by the careless or erroneous citations of authorities.

A. H.

NEW FERNS DESCRIBED AS HYBRIDS IN THE GENUS *DRYOPTERIS*³

The recent activity in the study of hybrids, both plant and animal, has received a notable contribution in this paper by Dr. Dowell, and it is of special interest to us, not only as coming from one of our own members but also for the reason that the material upon which it is based was largely obtained from Staten Island.

Six hybrids are recognized as referable to the genus *Dryopteris*, in which the species *cristata*, *spinulosa*, *intermedia*, *clintoniana*, *goldiana*, and *marginalis* are concerned. Three of these are described as forms not heretofore recognized, viz., *D. clintoniana* × *intermedia*, *D. goldiana* × *intermedia*, and *D. goldiana* × *marginalis*, and two now regarded as hybrids were previously classed as species or varieties, viz., *D. cristata* × *intermedia* = *D. boottii* (Tuck.) Und. and *D. clintoniana* × *goldiana* = *D. goldiana celsa* Palmer. The remaining one is *D. cristata* × *spinulosa* (Milde)
C. Chr.

The several characteristics are clearly described and the facts

³ By Philip Dowell. *Bull. Torrey Club* 35: 135-140. 1908.

in regard to propinquity, environment, etc., are such that but little discussion seems necessary in order to defend the theory of hybridity in connection with these ferns.

A. H.

NASH'S HISTORIC RICHMOND⁴

Staten Island is fortunate in having many old buildings and sites of historic interest, and the present pamphlet is intended to point these out. One is conducted from place to place in our island, and a numbered paragraph corresponding to a like number on the map is devoted to each old home or fort or cemetery. One hundred and thirteen places are mentioned. Under "No. 1, Borough Hall," the room of the Staten Island Association of Arts and Sciences is referred to, where the only milestone known to exist on the island is preserved. A note on page 24 is of much interest as an expression of opinion on the early settlement of the Island and the Rapaelje family.

W. T. D.

THE STATEN ISLAND MUSEUM AS AN AID TO SCHOOL WORK⁵

In this article the author calls attention to the progressive growth of museums and to differences between the older type of museums and the more modern museum. He states that the aim of the Staten Island museum is to make the exhibits such that they may tell their own story and have a sustained interest and at the same time prove instructive. These points are clearly discussed and aptly illustrated by concrete examples. The article should make a strong appeal to intelligent pupils to visit the museum and see the interesting and instructive exhibits.

P. H. D.

⁴ Excursion planned for the City History Club of New York. No. X, Historic Richmond. By Geo. N. Nash, M.D. Published by the City History Club of New York. 1908. 8vo, pamph., pp. 24, with map.

⁵ By Charles L. Pollard, *Curtis High School Monthly* 3: 10-11. 1908

Records of Meetings

REGULAR MEETING, FEBRUARY 15, 1908

The meeting was held in room 309, Borough Hall, New Brighton.

President Howard R. Bayne in the chair.

About eighty members and guests were present.

In the absence of the recording secretary Mr. Charles L. Pollard was elected secretary *pro tem*.

The minutes of the meeting of January 18, 1908, were read and approved.

The following were elected to active membership: Mrs. Clare Herbert Brown, George H. Downing, Miss Anna G. Du Bois, Miss Mary W. Green, Mrs. Anton W. Hoffmeyer, Miss Rebecca M. Ludlum, Mrs. Charles Knight.

SCIENTIFIC PROGRAM

Mr. David M. Van Name read a paper on the history of the cultivation of the *Dahlia*.

Mr. William T. Davis exhibited preserved specimens of New Jersey amphibians and reptiles, with notes on the same, in connection with a review of the *Annual Report of the New Jersey State Museum* for 1906. (Printed in full in this issue, p. 47.)

Mr. Davis read also, on behalf of Mr. Alanson Skinner, a paper describing the massacre of the Lenapé Indians, in 1643, under the Dutch Director, Kieft. (Printed in full in this issue, p. 53.)

Mr. James Chapin exhibited a skin of Wilson's petrel or "Mother Carey's Chickens," and read notes on its appearance in the vicinity of Staten Island. (Printed in full in this issue, p. 58.)

Mr. Lloyd M. Bayne read a note on a case of involuntary suicide by a barn swallow. (Printed in full in this issue, p. 62.)

Mr. Ira K. Morris presented a map of Staten Island, hand made, obtained through Miss Lyon, of Rossville. The following memorandum is written on the back: "1864. I found this paper today among large masses & as it shows how Master Leeds Kerr's gt. gt. gt. grandfather used to study out the questions of his day, sketching maps for himself, I throw it into the trunk marked W. L., being his gt. gt. gt. grandfather's trunk.

William Leeds, Edward Leeds, Hon. John Leeds, John Bozeman & Lucretia (Leeds) Bozeman, daughter of last named, Rachel Leeds Kerr, wife of David Kerr, Esq. of Talbot Co., Md. & John Leeds Bozeman, children of J. & Lucretia Bozeman. John Leeds Kerr, John Bozeman Kerr, Master Leeds C. Kerr.

1627-29-75."

The general outlines of Staten Island are fairly well indicated, but many of the old settlements are placed considerably out of their correct locations. Apparently, also, additions were made to the map several years after it was first commenced.

A considerable portion of the surrounding land and waters is included, and it is interesting to note that Ellis Island is called "Green Island" and Bedloe is designated "Red Cross Island." A third island, apparently where the lighthouse is now located, is marked "Oyster Island."

If the memoranda are authentic this is probably the oldest map of Staten Island extant, and constitutes an exceedingly interesting historical relic.

Mr. Howard H. Cleaves exhibited an enlarged photograph of a gray screech owl, *Megascops asio* (Linn.), taken on November 27, 1907.

The meeting then adjourned.

REGULAR MEETING, MARCH 21, 1908

The meeting was held in the reading room of the New York Public Library at St. George.

President Howard R. Bayne in the chair.

About seventy members and guests were present.

In the absence of the recording secretary, Mr. Charles L. Pollard was elected secretary *pro tem*.

The minutes of the meeting of February 15, 1908, were read and approved.

The following were elected to active membership: E. Howe Bennett, Z. James Chadbourne, John F. Kraft, Amzi T. Rogers, DuBois Tooker.

The president announced the death of Mr. Leonard Joseph Busby, who was elected to active membership in the Association on October 17, 1907. Mr. Busby was prominent in business circles in Brooklyn and Manhattan and had been for many years a partner in the firm of Holt and Co. He was pleased to assist in supporting and encouraging the Association by maintaining his membership although not taking an active part in our proceedings. The secretary was instructed to transmit a suitable letter of regret and sympathy to the family of the deceased.

Mr. E. C. Delavan offered an amendment to Bylaw VIII, in regard to method of procedure, etc.

Under the provisions of Bylaw VII this proposed amendment went over until the next meeting of the Association.

Mr. John Rader called attention to certain proposed amendments to the game laws, now before the New York State Legislature. After discussion it was

Resolved, that this Association cordially indorses the recommendations of the National Association of Audubon Societies with respect to the bills now pending in the Legislature amending the State game laws, popularly known as the Cobb Mills bills; and that it urges the representatives from Richmond County to vote for the amendments approved by the said

Society and enumerated in the brief published by the latter under date of March, 1908, and prepared by William Dutcher, president of said Society.

Resolved, that a copy of this resolution be transmitted to the Hon. Charles E. Hughes, Governor; to the Hon. Dennis J. Harte, Senator for the 2nd District; and to Hon. William Allaire Shortt, Assemblyman for the County of Richmond.

SCIENTIFIC PROGRAM

Mr. Ira K. Morris presented an old framed document, the certificate of honorable discharge of John Britton, private in Captain Richard S. Cary's Troop of Richmond Cavalry of the County of Richmond, from the service of the United States, dated December 2, 1814, and made some comments on the same. (Printed in full in the *Staten Islander*, March 25, 1908.)

Mr. William W. Bryan presented two original instruments, one a Pennsylvania land grant of 1795 and the other a deed to land in the same state, dated 1839.

Mr. William T. Davis exhibited a panoramic photograph of the Billop House at Tottenville.

Mr. Davis also read a short paper on the high-bush blueberries (*Vaccinium corymbosum* and *V. atrococcum*) found on Staten Island. (Printed in full in this issue, p. 63.)

Mr. Alanson Skinner gave a description of the implements, utensils, costumes, etc., of Iroquois workmanship included in the collection now on display in the branch public library at St. George.

Mr. Skinner also presented an old photograph of the frigate New Orleans, one of the U. S. navy vessels in the war of 1812.

Mr. F. W. Skinner commented upon certain of its features of construction.

Mr. James Chapin exhibited specimens and read notes on the species of mice and shrews known to occur on Staten Island. (Printed in full in this issue, p. 65.)

Mr. Chapin read also a paper giving records of the local occurrence of the coot (*Fulica americana* Gmel.). (Printed in full in this issue, p. 68.)

The meeting then adjourned.

REGULAR MEETING, APRIL 18, 1908

The meeting was held at the Staten Island Academy, New Brighton. Vice-President William T. Davis in the chair.

In the absence of the recording secretary Mr. Charles L. Pollard was elected secretary *pro tem*.

The minutes of the meeting of March 21, 1908, were read and approved as amended.

The following were elected to active membership: Mrs. Lester W. Clark, Mrs. Herbert Crabtree, Miss F. E. C. Nichols, Miss Harriet Slator, Mrs. Arthur Sloan, Mrs. Wilbur W. Whitford.

The chairman announced the death, on April 15, of Mr. George S.

Scofield, a member of the first Board of Trustees, and a member of the Natural Science Association of Staten Island since 1902.

The following amendment to the bylaws, proposed at the last meeting of the Association, was adopted:

VIII. GENERAL PROVISIONS

All procedure and business of the Association not fixed by the Constitution or Bylaws shall be determined by the Board of Trustees, and all questions of parliamentary order and procedure not specially provided for by the Bylaws shall be governed by [Cushing's Manual] *Roberts' Rules of Order*.

The curator-in-chief announced that the museum cases had been received and placed in position; that the installation of specimens was under way, and that the museum would probably be ready for opening some time in May.

Mr. Charles L. Pollard proposed various amendments to the Constitution and Bylaws which went over until the next meeting of the Association.

SCIENTIFIC PROGRAM

Mr. David M. Van Name read a paper on "Trees," discussing them from their structural and economic standpoints and concluding with a plea for the preservation of our forests.

Mr. George W. Tuttle presented a series of photographic reproductions of early maps of Staten Island and of New York City and vicinity, with explanatory notes. (Printed in full in this issue, p. 70.)

Mr. William T. Davis and Mr. Alanson Skinner gave a series of memoranda on a collection of Indian stone implements found in one day in the vicinity of Mariners Harbor. (Printed in full in this issue, p. 88.)

Mr. Davis also exhibited the skull of an otter, *Lutra canadensis*, which was found near Newfoundland, N. J., and commented on the scarcity of the animal. (Printed in full in this issue, p. 90.)

The meeting then adjourned.

ANNUAL MEETING, May 16, 1908

The meeting was held at the Staten Island Academy, New Brighton. President Howard R. Bayne in the chair.

About forty-five members and guests were present.

The minutes of the meeting of April 18, 1908, were read and approved.

The annual reports of the Board of Trustees and the Officers of the Association were read and ordered placed on file. (See pp. 107-114):

The president stated that the next order of business was the election of four trustees to fill the vacancies caused by the expiration of the terms of office of Philip Dowell, John Blake Hillyer, George Scranton

Humphrey, and William Hinman Mitchill, and called for the report of the committee on nominations.

The committee submitted the names of the present incumbents. The president asked if there were any other nominations and none others being made the secretary was instructed to cast one affirmative ballot for nominees submitted by the committee.

The secretary cast the ballot as instructed and the president declared Philip Dowell, John Blake Hillyer, George Scranton Humphrey, and William Hinman Mitchill to be elected trustees of the Association for the ensuing three years.

The following were elected to active membership: Philip H. Cassidy, George A. Clapp, Mrs. George A. Clapp, Guy Carleton Dempsey, Mrs. Charles A. Ingalls, Captain Andrew J. Newbury, George J. Turnbull.

The proposed amendments to the Constitution and Bylaws, submitted at the last meeting, were read, discussed, and adopted, as follows:

In Article II of the Constitution omit the words "corresponding secretary."

In Article I, Section 2, and in Article IV, Section 3 of the Bylaws, omit the word "recording."

Strike out Section 4 of Article IV, and renumber the remaining sections accordingly.

Add the following new bylaw:

VIII. SECTIONS

Any five or more members of the Association may at any time, with the approval of the Board of Trustees, organize a section for the study or exploitation of special topics within the scope of the Association. Such sections may hold meetings at their convenience, choose such officers as they may deem necessary, and transact business incident to the objects for which they are organized; but they shall incur no expense and assume no responsibility in the name of the Association except as specifically authorized by the Board of Trustees. Membership in the sections shall be limited to members of the Association, and any member shall be entitled to membership in any of the sections.

Change the numbering of the present Bylaw VIII to IX.

The curator-in-chief read an address on "The Modern Museum." (Printed in full in this issue, p. 91.)

The president then delivered his annual address. (Printed in full in this issue, p. 96.)

The meeting then adjourned.

Annual Reports

REPORT OF THE BOARD OF TRUSTEES

TO THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

Ladies and Gentlemen: Your Board of Trustees begs leave to report as follows for the year 1907-08:

The Board held ten meetings, as follows: the annual meeting, on May 25, 1907; stated meetings on October 5, 1907, January 4, and April 9, 1908, and special meetings on June 15, September 18, October 28, and December 17, 1907, and February 18 and May 4, 1908.

At the annual meeting officers of the Association were elected in conformity with the provision of Article II of the Constitution.

One vacancy in the Board, caused by the resignation of Captain Daniel Delehanty, was filled by the selection of Samuel McKee Smith.

Four patrons were elected, in conformity with the provisions of Section 6 of Bylaw III, as follows:

Arthur Hollick, Charles Louis Pollard, James Chapin, Ignaz Matausch.

Each one donated specimens to the museum and library valued at more than \$200 and aggregating probably not less than \$1,000.

One corresponding member, Charles Conrad Abbott, M.D., of Trenton, N. J., was elected.

The material included in the museum and library was removed from the Staten Island Academy and installed in the room assigned for the purpose by the city, on the third floor of Borough Hall, during the early part of last July.

An appropriation of \$4,000 was subsequently obtained from the city for the furnishing and equipment of the museum and library. By means of this appropriation fourteen table cases and nine upright cases were constructed in accordance with our plans and specifications, prepared in consultation with the city architects, Messrs. Carrère and Hastings, and all supplies necessary for the prosecution of work in the museum and library were provided.

Charles Louis Pollard, M.A., formerly of the United States National Museum, was appointed curator on June 17, 1907, and a museum and library staff was subsequently organized, to have general charge of the arrangement of the museum and library, as follows:

Curator-in-chief.

Charles Louis Pollard

DEPARTMENT OF ZOÖLOGY

DEPARTMENT OF BOTANY

William Thompson Davis, *Honorary Curator*

Philip Dowell, *Honorary Curator*

James Chapin, *Honorary Assistant*

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DEPARTMENT OF ANTHROPOLOGY AND
ARCHEOLOGY

Alanson Skinner, *Honorary Curator*

DEPARTMENT OF GEOLOGY, MINER-
ALOGY, AND PALEONTOLOGY

Arthur Hollick, *Honorary Curator*

DEPARTMENT OF ARTS AND AN-
TIQUITIES

Committee in charge

DEPARTMENT OF BOOKS

The Curator-in-chief temporarily
in charge

The work of arranging the collections systematically and for display has been diligently prosecuted and the museum will be formally opened to the public Saturday afternoon, May 23, with appropriate exercises, due notice of which will be mailed to all of the members. In order to expedite this work and insure the opening on the date determined, a museum assistant, Mr. Harold Nelson, has been temporarily employed. Details in regard to museum and library work, accessions, etc., are included in the appended report of the curator-in-chief. The expenses incurred in putting the museum into shape for formal opening have been met by means of a fund of \$145 subscribed by Charles W. Hunt, William T. Davis, William G. Willcox, Walter C. Kerr, Thomas Craig, Daniel S. Hage, Ernest Flagg, and T. Livingstone Kennedy.

Earnest efforts were made to increase the membership of the Association, by means of circulars describing its objects, aims, and needs, with the result that the membership has more than doubled since the last annual meeting. In this connection the Women's Auxiliary Committee has rendered valuable service and assistance.

In response to a request from the head librarian of the branch public library at St. George, to install there a suitable exhibit on the occasion of the opening of the library, the curator-in-chief was authorized to proceed in the matter at his discretion. The installation was accomplished and the display proved to be of such interest to the patrons of the library that it led to a similar request from the Stapleton library and an exhibit was installed there also. These exhibits yet remain in their respective locations and are constant reminders to the public of our aims and activities.

The routine business of the Association was promptly and systematically transacted by the officers of the Association and by the standing committees provided for under the rules and regulations of the Board. Reports of these committees are appended and the reports of the secretary and of the treasurer will be submitted later. Details of the administrative affairs of the Association are set forth in these reports and will receive further mention and explanation by the president, in his annual address.

Submitted on behalf of the Board,

ARTHUR HOLLICK,
Secretary

REPORT OF THE EXECUTIVE COMMITTEE

TO THE BOARD OF TRUSTEES,

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES,

Gentlemen: Your Executive Committee respectfully submits the following report for the year 1907-08:

The committee met whenever necessary and transacted all items of business referred to it for determination by the Board. Conferences were also held by subcommittees of the committee.

The business transacted consisted largely of the preparation of plans, specifications, etc., in connection with the transfer, installation, furnishing, equipment, and care of the property of the Association in the quarters assigned for the museum and library in Borough Hall, and in personal conferences with the several city officials—the Comptroller, Corporation Counsel, President of the Board of Aldermen, President of the Borough of Richmond—and in appearances by individual members of the committee before the Board of Estimate and Apportionment and our local Board of Improvements.

HOWARD R. BAYNE, *Chairman*

WILLIAM H. MITCHILL

GEORGE S. HUMPHREY

CHARLES A. INGALLS

ARTHUR HOLLICK, *Secretary*

REPORT OF THE AUDITING COMMITTEE

TO THE BOARD OF TRUSTEES,

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES,

Gentlemen: Your committee respectfully reports that it has examined the treasurer's annual report for the fiscal year ending May 25, 1907, and also the reports submitted at the stated meetings of the Board held on January 4 and April 9, 1908, together with the accompanying books and vouchers, and found the same to be correct in all particulars.

A change in the personnel of the committee occurred in the early part of 1908 by reason of the selection by the Board of one of the members of the committee, Mr. Charles A. Ingalls, to act as treasurer in place of Mr. J. Blake Hillyer, resigned.

GEORGE S. HUMPHREY, *Chairman*

CHARLES A. INGALLS (May, 1907-January, 1908)

STAFFORD C. EDWARDS (January-April, 1908)

REPORT OF THE PUBLICATION COMMITTEE

TO THE BOARD OF TRUSTEES,

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES,

Gentlemen: Your committee respectfully reports as follows for the year 1907-08:

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The following publications have been issued since the last annual meeting:

PROCEEDINGS, VOL. I, Part IV (January to May, 1907, inclusive), pp. 93-136, pl. III. Issued September 20, 1907. Edition 500 copies.

Ibid., Vol. I, title page and table of contents, pp. i-v, and index, pp. 137-150. Edition 500 copies.

A circular, in leaflet form, containing a complete list of the publications of the Association and the conditions under which they are distributed and sold.

Copy for Part I, Vol. II, of the PROCEEDINGS has been prepared for publication and arrangements have been made for its early issue. This will include the records of the meetings from October 19, 1907, to January 18, 1908, inclusive.

PHILIP DOWELL, *Chairman*

WILLIAM T. DAVIS

ARTHUR HOLLICK

REPORT OF THE CURATOR-IN-CHIEF

TO THE BOARD OF TRUSTEES,

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES,

I have the honor to submit herewith my first annual report as curator-in-chief of the Association, covering the period from July 1, 1907, the date of commencement of museum records, to May 16, 1908, the close of our fiscal year.

THE MUSEUM

A brief recapitulation of the events of the past year, in so far as they relate to the development of the museum, may be of interest.

Immediately after my appointment as your curator on June 15, 1907, I made a thorough inventory of the collections belonging to the Association, then stored in a room at the Staten Island Academy. The inventory was submitted to the Executive Committee on June 19, 1907, together with a report outlining the chief requirements in the matter of additional specimens and of supplies, and indicating the more important lines of work to be undertaken.

On July 10 the removal of the collections from the Academy to room 309, Borough Hall, was begun, and the transfer occupied the most of three days, during which time Dr. Arthur Hollick very kindly assisted me in the work. A portion of the room was occupied by draughtsmen attached to the office of the Chief Engineer of the Borough, so a temporary partition was erected separating the easternmost half of the room for our use.

The next few months were largely occupied in rearranging the various collections, in checking up the periodicals in the library with a view to securing missing numbers whenever possible, and in preparing detailed plans for exhibits. On December 26 a letter was addressed to President

Cromwell setting forth the urgent need of the Association for the whole of room 309, originally assigned to our use by the president of the borough under authority of the Commissioners of the Sinking Fund, and requesting him to place us in full possession on January 15, 1908, if possible. On the latter date the room was accordingly vacated and the temporary partition removed. Throughout this period the collections were accessible to members of the Association, though the general public was not admitted.

With the delivery of the exhibition cases early in the spring it was possible to make a permanent disposal of our furniture, etc., which was done according to a plan approved by the Board on September 18, 1907. In order to provide an office and workroom for the museum staff, a light but firm partition has been erected at the east end of the room, leaving a space approximately 25 by 75 feet for a museum room, with two doors opening into the corridor.

EXHIBITION CASES AND OTHER FURNITURE

With the proceeds of the bond issue of \$4,000 authorized by the city of New York for furnishing and equipping the museum, 14 table cases and 9 glass upright cases have been provided for the exhibits, and one 14-drawer table case for storage. Four additional glass-top table cases already belonging to the Association have also been utilized for exhibits. The drawings and specifications were made by Carrère and Hastings under the supervision of the curator-in-chief, from designs by Dr. Arthur Hollick. The contract for their construction was awarded to the Siegel Cooper Co. for \$1,798.48.

The table cases are 2½ by 5 ft., with level glass tops 6 in. deep, painted white within, and having two drawers beneath. The uprights are 6 ft. high and 1 ft. deep, with half-inch plate glass shelves supported on key-hole brackets. The woodwork is quartered oak with weathered finish.

The remainder of the appropriation was utilized in the purchase of a desk, typewriter, chairs and other office furniture; alcohol and other preservatives; glass jars for storage and exhibition; library cards and stationery; and miscellaneous museum supplies. The various expenditures have been itemized in previous reports to the Board of Trustees.

MUSEUM ORGANIZATION

On April 9 the organization of a museum staff was approved by the Board and appointments were made as stated in the annual report of the Board (see p. 107).

On May 1 Mr. Harold Nelson was appointed museum assistant for a temporary period of one month, and has been engaged since that date in duties incidental to the public opening of the museum.

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ACCESSIONS

The accession record was begun on July 1, 1907.

The total number of accessions has been 58, divided as follows: exchange, 1; collected for museum, 6; gifts, 51. The number of separate individuals or institutions to whom these accessions are accredited is 31.

On account of the fact that some accessions could only be estimated and not accurately counted, the total number cannot be given exactly, but it approximates 8,000. The following table gives the distribution of accessions among the separate departments:

Minerals, geological specimens.....	about 1,125
Fossils	18
Plants	about 3,000
Birds	206
Birds' eggs and nests.....	503
Mammals	3
Indian implements	13
Marine invertebrates, as shells, corals, etc.....	about 550
Reptiles	60
Insects	195
Drawings, maps, manuscripts.....	136
Books	261
Pamphlets, newspapers	1,958
Relics, curios	34
Miscellaneous implements, cases, labels, tools, etc....	estimated 100

THE OPENING OF THE MUSEUM

Preparations are nearly completed for the opening of the museum to the public on May 23, the date fixed by the Board. On account of the limited time at our disposal it will be necessary to install some temporary exhibits, but it is believed that the cases in general will present a satisfactory appearance. The Art Committee has kindly furnished for the occasion a valuable loan exhibit of antique china, brass, pewter, and copper ware, and numerous colonial relics. The James Chapin collection of Staten Island birds, recently donated, and the minerals of the Frederick Hollick collection, will be displayed for the first time.

When this important step is taken, and adequate funds secured for the maintenance of the museum as a public institution, the Association may indeed look forward to a career of even greater usefulness and importance in the community.

Respectfully submitted,
CHARLES LOUIS POLLARD,
Curator-in-chief

ANNUAL REPORT OF THE RECORDING SECRETARY

May 16, 1908

MEMBERSHIP

Membership at date of last annual report:

Active	141
Life	2
Honorary	2
Corresponding	1

146

Since elected:

Active	172
Corresponding	1
Patron	1

174

320

Resigned	7
Deceased	3
Dropped from roll	1
Declined election	1

12

On roll at date..... 308

This now includes 298 active, 2 life, 2 honorary, and 2 corresponding members, and 4 patrons. In the latter class one was elected without having been previously a member, and three were elected from among the active members of the Association.

MEETINGS

Eight regular meetings, including the annual meeting, were held in accordance with the provisions of the bylaws. One was held at the residence of the President, one in the reading room of the branch public library at St. George, one in the museum room in Borough Hall and five at the Staten Island Academy.

The total attendance was approximately 400, or an average of 50 at each meeting, including members and guests.

During the absence of the secretary in February, March, and April, the duties of the position were performed by the curator-in-chief, who was appointed acting recording secretary by the Board of Trustees for that period.

ARTHUR HOLLICK,
Recording Secretary

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ANNUAL REPORT OF THE TREASURER

Debit and Credit Account

Dr.

Balance in hand at date of last annual report		\$536.69
Since received:		
Dues	\$786.50	
Note	100.00	
Subscriptions to special museum fund..	145.00	
Subscriptions to entertainment fund....	50.00	
Subscriptions to and sales of PROCEEDINGS	28.75	
Interest	13.00	\$1,123.25
Total		<u>\$1,659.94</u>

Cr.

Paid for printing of circulars, stationery and postage	\$172.18	
Paid for printing PROCEEDINGS.....	140.65	
Paid for museum and library supplies..	100.08	
Paid for expenses of moving museum and library	55.95	
Paid for expenses of entertainment committee	52.96	
Paid for insurance	25.00	
Paid for prize in natural science.....	10.00	
Paid for premium of treasurer's bond..	5.00	
Paid for back numbers of serials.....	2.85	
Paid for discount on note.....	1.50	
Paid for salaries of curator-in-chief and assistant	904.20	
Total		<u>\$1,470.37</u>
Balance in hand		189.57

CHARLES ARTHUR INGALLS,
Treasurer

Exercises held in Connection with the Opening of the Museum to the Public

MAY 23, 1908

The Museum of the Staten Island Association of Arts and Sciences was formally opened to the public on the afternoon of May 23, 1908.

About 100 members and guests were present.

President Howard R. Bayne delivered an address of welcome to those in attendance and accepted as a trust, on behalf of the Association, the dedication of the museum to the use and for the benefit of the public, and introduced Hon. George Cromwell, President of the Borough of Richmond, who delivered the following address in reply, on behalf of the people of the Borough:

Mr. President, Ladies and Gentlemen:

In speaking here this afternoon for the Borough of Richmond, I am addressing in you, Mr. President, a man who holds an office much older than my own, for the Association of Arts and Sciences is an older organization than the borough. Not only does your splendid and complete collection of geological specimens impress upon us the antiquity of Staten Island, but your Association, under a different name, antedates our consolidation with the City of New York, and is today a living and convincing evidence of what things in the way of study and research and education Staten Islanders were able to accomplish by themselves before the ægis of the metropolis was extended over our towns and villages and institutions. We still are, and always will be, autonomous in our initiation and perfection of special works and organizations peculiar to this community and of permanent value to it, of which the Association of Arts and Sciences is a brilliant example; and I devoutly hope that the day will never come when our autonomy

in any respect will be lessened and we be treated as if we were incapable of taking care of ourselves.

This Association is a fair criterion of our citizenship—of the public spirit and devotion to Staten Island which characterize the men who make the Borough of Richmond what it is. Professional men, scientific men, business men, have given time and thought, and sometimes much hard work, for more than a quarter of a century past, without any sort of material reward or any chance of it, to the investigation of the flora and fauna and geological structure of Staten Island. This is the kind of thing that shows the stuff we are made of, quite aside from our daily tasks and ambitions.

The results we see today. The geological exhibit, I believe, is practically complete. So, I think, is the collection of flora. Of the animal life of the Island there is probably more to be learned, or at least more to be shown; but the most interesting history and progress and growth of the Association, as related to us by its president, is a sure guarantee that in the years to come this fascinating and gradual labor of love will continue until we shall have a museum of natural history and scientific records of our Island which will rival in character and value any similar institution in the world.

The educational value of such an association as this, so admirably ordered and conducted, is truly vast and far reaching, and the establishment of its collections at St. George, where, after considerable time and effort, we were able to obtain for it this room in the borough hall, makes them easily accessible from all parts of the Island, and places them where they can be of the greatest utility, in proximity to our largest and most advanced schools and to the largest of our public libraries. To students and readers the best illustrations of their texts are not found in engraved pages but in the actual objects of interest as seen and perhaps handled. The universal acceptance of this practical side of modern education is seen in the field classes, chiefly in botany, which are organized everywhere for the study of things as they

really are. In this form of education, if I am not mistaken, Dr. Hollick was a pioneer, and he was, I think, one of the original founders of this association and is today one of its most active and valuable members. And not only Dr. Hollick, who is a professional educator, but you, Mr. President, as you have told us with natural enthusiasm, and I, and all the men who have the welfare and progress of our race at heart, realize the inestimable boon of having collections like these of this association near at hand and easy to consult.

It seems to me that the gentlemen who composed the Association of Arts and Sciences in its original form and under its original title, deserve the gratitude of all Staten Island. They pursued a steady course of research, they got together and preserved numerous specimens of all sorts, they produced papers which must be accepted as part of the permanent educational literature of the island, and they gave money as well as labor and thought to the building up of what cannot fail to be one day a distinctly important feature among the institutions of this great city—a society which preserves for all time the complete natural and scientific and art history of the most beautiful borough of the city and destined to become a most important one commercially.

The old members of this association, as the importance and volume of their achievements increased, began an active propaganda which enlisted the interest of Staten Islanders far and near, and resulted, for one thing, in a largely increased membership. This brought in money, in small annual dues for the most part, and not much, but enough to help. After we had arranged quarters for the Association in the borough hall, we were able to obtain from the municipal authorities an appropriation for the furnishing of this room. I may be pardoned for rehearsing these facts, because they lead up to a subject which, as you know, is a lively and pressing one in the minds of the gentlemen who form the working nucleus of the association—namely, the possibility of obtaining from the city an annual appropriation of subvention to help support and advance the society and its work.

I do not see, myself, why an association like this, which has shown how much it can do unaided, which has grown to such proportions and shows such results, and which manifestly and unquestionably must grow even more rapidly in the future and assume an even more important place in the city of New York—I do not see why it should not be recognized as the city has recognized the American Museum of Natural History and the Metropolitan Museum of Art. This is not a moneymaking institution, any more than a public school or the College of the City of New York or a public library; and all such institutions ought, it seems to me, to be helped as far as possible by the community which they benefit. The Metropolitan Museum of Art has grown from a very small beginning, and there are men still active among us who were members of the association which began it, and many more who remember the little building in Fourteenth street in which it was housed for many years. The association which shows, as this one does, a capacity for growth of a similar kind, if not to such grandeur, should be fostered and assisted by every legitimate means.

I speak of this because I am aware that I am looked to to bring it to pass. That, of course, I cannot do. Much more can be done in that direction by officials in the central city government. This much, however, I can say for myself—that, as soon as the finances of the city permit, and at any legitimate opportunity that offers, I shall use my utmost endeavors toward a regular appropriation for the Staten Island Association of Arts and Sciences.

I am very glad to have an opportunity to formally welcome the Staten Island Association of Arts and Sciences to the borough hall. It is very pleasant to me to think that this important society has found its home under the same roof that shelters the local borough government with all its bureaus and branches, and that we form all together one family, devoted with a single purpose to the welfare and advancement of our island.

I am inclined to regard this as a particularly propitious date for the initiation of the new abode of the Association, as it is the

anniversary Saturday of the laying of the cornerstone of Richmond Borough Hall. That event took place on May 21, but it was the Saturday of the same week in May as this is; and I hope that today, by inaugurating a new era in the history of this association, we are laying the cornerstone of a society which in the years to come will far outgrow its present accommodations.

Dr. Frederic A. Lucas, Curator-in-chief of the Museums of the Brooklyn Institute of Arts and Sciences, gave the following address on

Purposes and Aims of Modern Museums

We are gathered today to take part in the opening of a new museum, the latest, but we may be sure not the last, of the public museums of Greater New York, and it has been suggested that I say a few words on the relation of the museum to the public. This would seem an easy task for one whose entire working life has been spent in museum work and yet I confess I have found the task a hard one.

Why do we have museums at all; what are they for; why in this very practical age are millions expended in establishing them, what does the public receive in return for the money it has invested?

All these are perfectly fair questions, the kind that any business man or city official might well ask if called upon to aid in founding or sustaining a museum, and yet they are by no means easy to answer off hand. Merely to answer the question why we have museums would take much time, for like most things, museums did not spring into existence all at once but are the product of long years of growth and evolution, and they are still growing and changing.

The purposes of museums have been well defined by some of the men best acquainted and most intimately connected with them and I cannot do better than give you two of these definitions. According to John Edward Gray, museums are for "the diffusion of instruction and rational amusement among the masses

of the people and to afford the scientific student every means of examining and studying the specimens which the museum contains." And thirty years later our own Dr. Goode wrote that "A museum is an institution for the preservation of those objects which best illustrate the phenomena of nature and the works of man and the utilization of these for the increase of knowledge and for culture and enlightenment of the people."

Now, if a museum fulfills its purposes as defined by Dr. Goode, it seems to me that the question whether the public gets the interest on its investment would be answered in the affirmative. Even if it merely preserved a record of the life that with the rapid march of civilization is being ruthlessly swept out of existence, would not the museum serve a good purpose and justify its being? For nowadays the entire face of Nature is being altered by the energy of man, and natural conditions are changing so rapidly that in many places the present generation has little or no knowledge of what was there even fifty years ago.

It is only three centuries since Henry Hudson sailed up New York Bay—there are many edifices in Europe older than that, and yet little remains of what was here then. The inhabitants—the forests, to a considerable extent the very rocks themselves—have disappeared, and the life that then abounded has disappeared with them. And it is one of the purposes of a museum, one of the purposes of this museum, to carefully gather and preserve all objects that may aid in giving an idea of the life that was here three centuries ago and to provide for the information of those who will be here three centuries hence.

But this museum of today is a great deal more than a place where objects are merely preserved, it is an educational institution on a large scale, whose language may be understood by all, an ever open book whose pages appeal not only to the scholar but even to the man who cannot read.

Its mission or one of its missions is to give the visitor a hint of the many interesting things that are to be found close at hand, to show their hidden meaning, in short to teach him to observe and to think.

Now the idea that the museum is an important educational factor in the community is comparatively new, and it is only recently that steps have been taken to put this idea into execution. The early museums were primarily for the student, secondarily for the public, and when a century and a half ago the British Museum was opened to the public, the attendance was limited to thirty a day and admission was by ticket and carefully arranged for in advance. Nowadays when the visitors at our larger museums average from 500 to 1,000 or more a day, this strikes us as amusing, but this was really the germ from which the modern educational museum has developed. And if your attendance should seem small in comparison with that of older and richer museums, it may encourage you to recall that there was a time when what is now the greatest museum in the world had but 1,000 a year.

We are so familiar with public museums that we are prone to forget how very recent they really are and how their aims and objects have changed even within the past twenty-five years. The great Museum of Natural History impresses one as having existed for long years and yet not only this, but every museum in Manhattan has practically come into existence, certainly into active being, in my own day. And yet while museums themselves are far from ancient the idea that they might be utilized on a great scale for the benefit of the public at large is still more recent.

I hesitate to repeat what I have said so often of late that one of the great differences between the old museum and the new is that the one displayed objects while the other aims to illustrate ideas. And yet this is one of the important characteristics of the modern museum. The old museum was merely a storehouse whence students drew the material for their work and into which the public was permitted to gaze. The new museum seeks to interest the visitor in the field of work, illustrates its methods and purposes and displays some of the results. For example, in place of an hundred birds intended only to show just so many species

and meaning little to the average visitor, we have a single group showing one of these birds at home, the purpose of which is to show the conditions under which birds live and to interest the beholder in the study of bird life.

The idea that the visitor must be interested, though not particularly new, is again one that has gained general acceptance only recently. Nowadays it is definitely recognized that while a museum is an eminently serious proposition it will not be taken too seriously by visitors, that in fact only a small proportion of them seek it with a definite purpose to be instructed, and so a distinct effort is made to arouse the interest of the average visitor. A museum should take itself seriously but none the less should it provide "rational amusement" for the many by whose funds it is largely supported. And this it does by ever keeping in mind what Dr. Goode used to call the human interest endeavoring to show some object or make clear some idea that will appeal directly to the observer and arouse his personal interest in the museum. To do these things and do them well calls for knowledge and training and I often wonder if the public appreciates the fact that museums do not run themselves; that it takes a trained force to get proper results out of a museum!

A museum without a staff is much like a locomotive without an engineer and fireman, the fuel, water, and apparatus are all present, but without the engineer the machine will not move. Did any of you ever do so simple a thing as write a label? If not, try it, taking something with which you think you are familiar, a robin for example, or a clam, tell what it is, where it is found, what it does and what it is good for and see what is the result. Did you ever think how many times, and for what diverse objects a museum officer is called upon to answer the question "what is this?" If you have you will realize the truth of the saying that a curator should know something about everything and everything about something, and if you have spent half a day in a curator's office you will also realize that a curator has many and varied things to do and that a museum is not a haven of rest.

That a museum should be a place for study and research carried on by the few who are directly interested in what seems abstruse science, is really a phase of its relation to the public. We know very well that what is a matter of purely scientific interest today is a matter of vital importance tomorrow, that the farmer, the fruit grower, the physician, for example, depend more and more upon the trained man of science for help in what were once considered matters with which he was not at all concerned. Here and elsewhere, the museum takes the knowledge gained by years of study, puts it into visible shape, and makes it available for all. And, after all, something is due the student for without him there would have been no museum for natural history.

I have said nothing of the field of a museum of art and would only remind you that the Staten Island Association is an Association of Arts as well as Sciences, and suggest that if the domain of Nature has been sadly encroached upon by the labors of man the province of art has been correspondingly widened. Neither have I said anything of what one may call the civilizing influence that a museum exerts upon a community, though this is one of the results, if not among the professed objects of the existence of a museum.

To inculcate the spirit of law and order, to foster a love of the beautiful, to teach the visitor to observe and think, to supply "rational amusement" to the masses, are among the things that a museum does for the public in return for its cash investment. Sidney Smith is credited with having preached the shortest and most effective charity sermon on record. He said, "he who giveth to the poor lendeth to the Lord. If you like the security, come down with the dust," so if you like your museum, support it.

But over and beyond these things are the educational opportunities offered to everyone and, after all, love of knowledge is the supreme test of civilization. Man stands pre-eminent among all living creatures in his desire for knowledge, his wish to know the reasons for all that goes on about him, and according to the

extent of this desire does he stand in the intellectual scale. The savage merely wishes to know where he can find something to eat and wherewith he may be clothed, the astronomer casts his eye across millions of miles of space seeking for knowledge of other worlds.

Informal remarks were made by Mr. Charles H. Townsend, Director of the New York Aquarium, and by Mr. Charles L. Pollard, Curator-in-chief of the Museum of the Association.

The Museum was then, by the President, formally declared open to the public.

In the evening a subscription dinner was given by the Board of Trustees, at the Staten Island Club, in honor of the invited guests.

The trustees present were Hon. George Cromwell, Howard R. Bayne, Arthur Hollick, William T. Davis, John DeMorgan, Philip Dowell, Stafford C. Edwards, J. Blake Hillyer, George S. Humphrey, Charles A. Ingalls, William A. Johnston, William H. Mitchill, and Samuel McK. Smith.

The guests present were Sanderson Smith, Franklin W. Hooper, Walter C. Kerr, Frederic A. Lucas, Charles L. Pollard, Charles H. Townsend, Louis L. Tribus, and William G. Willcox.

Informal addresses were made by President Cromwell, Professor Hooper, Dr. Lucas, Mr. Townsend, and others.

ORGANIZATION OF THE MUSEUM OF THE STATEN
ISLAND ASSOCIATION OF ARTS AND SCIENCES¹

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Charles Louis Pollard

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William Thompson Davis, *Honorary Curator.*

James Chapin, *Honorary Assistant.*

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¹Adopted by the Board of Trustees April 9, 1908.

Publications of the Association

PROCEEDINGS OF THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND

These PROCEEDINGS were printed in octavo numbers, partly in leaflet and partly in pamphlet form, from November 10, 1883 to June 3, 1905, and were included in nine volumes, separately indexed, as follows:

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"	III, pp. 67	Nov. 14, 1891—Oct. 14, 1893
"	IV, pp. 86	Nov. 11, 1893—Oct. 12, 1895
"	V, pp. 97	Nov. 9, 1895—Oct. 10, 1896
"	VI, pp. 64	Nov. 14, 1896—Oct. 8, 1898
"	VII, pp. 79	Nov. 12, 1898—Oct. 13, 1900
"	VIII, pp. 92	Dec. 8, 1900—Oct. 10, 1903
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Any of the above listed volumes may be obtained by members and patrons at \$1.25 per volume. To others the price per volume is \$2.50.

Single numbers of back volumes may be obtained at 10 cts. each, except the following, for which a uniform price of 50 cts. each will be charged:

Special No. 21, Vol. V, No. 5, Mar. 14, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. VII, No. 15, Mar. 10, 1900, "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jr. Pamph., pp. 33, pls. i-iv.

Special No. 23, Vol. VIII, No. 25, Oct., 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

PROCEEDINGS OF THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

These PROCEEDINGS are printed in octavo parts, four parts to a volume. They contain the business and scientific records of the meetings of the Association and are sent free to all members and patrons in good standing.

By resolution of the Association all members and patrons may obtain back parts at 25 cts. or back volumes at \$1.00. To others the price is 50 cts. per part or \$2.00 per volume, for both current and back issues.

Volume I, including Title Page, Table of Contents and Index, is as follows:

- Part I, June-December, 1905, pp. 1-26, issued April 10, 1906.
- " II, January-May, 1906, pp. 21-69, issued July 9, 1906.
- " III, October-December, 1906, pp. 71-92, issued April 17, 1907.
- " IV, January-May, 1907, pp. 93-136, issued September 20, 1907.

Volume II, Part I, October, 1907-January, 1908, pp. 1-46, issued October 17, 1908.

The Act of Incorporation, Constitution, and By-Laws, etc., (Pamph., 8vo, pp. i-xxv, 1906) and the special "Memorial Number," issued in commemoration of the celebration of the 25th anniversary of the organization of the Natural Science Association of Staten Island (Pamph., 8vo, pp. i-xxxvii, 1907), will be sent free on application.

Only a limited number of complete sets of the older volumes are now in stock, and orders for these will be filled in the order of application. The right is reserved to withdraw any part or numbers from sale at any time.

Checks should be made payable to the Staten Island Association of Arts and Sciences, and all remittances and communications addressed to
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PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION

OF

ARTS AND SCIENCES

[Formerly THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS

PUBLICATION COMMITTEE

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PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION
OF
ARTS AND SCIENCES

[Formerly THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

VOL. II

JULY 1908—FEBRUARY 1909

PART III

The Chestnut Disease on Staten Island¹

BY ARTHUR HOLLICK

Probably all of us have had our attention attracted to the large number of dead and dying chestnut trees throughout the island during the past two or three years; and so many persons have evinced an interest in the matter and sought for information in regard to the phenomenon, that it has occurred to me to present a brief outline of what we have learned in regard to the nature of the cause and certain incidental correlated facts.

The disease apparently had its origin somewhere in this vicinity and probably had begun its ravages before the time when it first attracted serious attention, in 1905. Exactly where the center of affection may have been has not been determined, nor is it certain where or by whom the effects were first systematically observed and recorded.²

By that time the disease had become so noticeable in Bronx Park that it could no longer be ignored by those who were responsible for the care of the trees, and an investigation was begun by Dr. Murrill to determine if possible the exact nature

¹ Presented October 17, 1908.

² Dr. W. A. Murrill, "A Serious Chestnut Disease." Journ. N. Y. Bot. Gard. 7: 143-153, *figs.* 13-19. June, 1906.

of the disease. Cultures were made from the affected trees, and healthy branches were inoculated and placed under careful observation. The cause was ascertained to be a hitherto unknown, or at least undescribed fungus, to which the name *Diaporthe parasitica* was given, in *Torrey*, 6: 189. Sept., 1906.

This fungus is found to begin its destructive work beneath the outer bark, in the inner layers and cambium, in which the mycelium has its growth. The first indication of its presence is the death of the bark, which changes in color on the exterior to a pale brown. Later on, little yellowish pustules, containing the spores, appear on the surface, giving a warty appearance to the bark. These spores germinate throughout the summer and early autumn and when ripe are disseminated by the wind and other agencies; and those which find a suitable abiding place, in abrasions of bark, or in wounds due to broken twigs and branches, insect punctures, etc., immediately start new centers of infection. The mycelium grows in a constantly enlarging circle around the point of infection until it finally girdles the twig or branch, cutting off the food and water supply and causing the death of the member above. The destructive effects are therefore not due entirely to the attack of the fungus on the area immediately infected but also to the incidental effect of the diseased part in starving the part above. The smaller branches are therefore the most likely to go first and trees that are attacked generally present the characteristic feature of dead and dying extremities for several seasons before they entirely succumb.

Trees that are broken or trimmed or that otherwise present numerous wounds or abrasions in which the spores may enter are always the worst infected. In fact, so far as observations have gone, it seems almost as if some injury were necessary for the spore to gain entrance beneath the bark. The larger trees on our hills, which were most affected by storms, were the first to go. The larger proportion of these are already dead, while those of smaller growth and with less injured branches, as the growth at Tottenville, are mostly still living, although badly infected and evidently destined to last but a few seasons more.

The most disquieting fact is that the disease is steadily spreading from this vicinity. It has now reached up the Hudson River as far as Poughkeepsie and into the adjacent parts of Connecticut, Massachusetts, and New Jersey. It has also been reported from as far south as the District of Columbia and west as far as Altoona, Pennsylvania. Thus far only the chestnuts and the southern chinquapin have been attacked. All of our other forest trees seem to be immune. No remedy has yet been found, and the nature of the disease and the method of its propagation and growth make this an exceedingly difficult problem. Unless it very soon ceases of itself, as other epidemics often do, the chestnut, in this vicinity at least, will soon be extinct.

Note on the Chestnut Fungus¹

BY WILLIAM T. DAVIS

On the twentieth of last June I found growing in the woods in Buck's Hollow a young chestnut, less than two inches in diameter, which was dying of the chestnut fungus. This little tree showed not only the usual pustules common to chestnuts suffering from attacks of *Diaporthe parasitica* Murrill, but near the ground there were many slender thread-like gelatinous masses, often one fourth of an inch in length, hanging from the bark. These jelly streamers dry, and the spores thus liberated are blown about by the wind or otherwise transported and find lodgement on other chestnut trees. The jelly streamers are mentioned because their presence and use in distributing the spores is not so commonly noticed as the simple pustules on the bark of the affected trees. In the present instance the unfortunate little tree had not only been attacked by the fungus, but as a result of its dying condition, had attracted the wood-boring beetle *Neoclytus erythrocephalus* Fab., and I found many of the insects running rapidly over its trunk and branches.

The chestnut is mentioned in the history of our island in connection with boundary lines, and for the use of its bark in tanning, by the early settlers. The value of its wood is of course well known. It is still very plentiful, but the rapid spread of the chestnut fungus to all parts of the island is fast killing what was probably at one time our most common forest tree. In no locality that I visited during the summer of 1908, with the exception of northern Manhattan Island, were there so many dead and dying chestnuts to be seen, as on Staten Island. In northern New Jersey no affected trees were observed at Lake Hopatcong, where the chestnut is plentiful, but at Ramsey several were found that

¹ Presented October 17, 1908.

had died from the fungus. At Jamesburg in central New Jersey, where the chestnut is quite common, a few trees were dead and dying. It is evident that the chestnut blight has not had time to become so thoroughly established in these localities.

A Visitation of Geometrid Moths¹

BY WILLIAM T. DAVIS

The New York papers of July 17, 1908, and for two or three days thereafter contained accounts of the great number of measuring-worm moths, *Ennomos subsignarius* Hübner, which suddenly appeared in the city on the evening of July 16. The visitation followed a westerly wind, and the white moths, which were particularly numerous uptown, covered the fronts of buildings and swarmed by the thousands about the arc lights.

A considerable amount of "Newspaper entomology" was given by some of the writers, who stated among other things that the brown-tail moth had come to town from Massachusetts, and much injustice was done to the English sparrow, which was said by several observers to pay no attention to the moths. The "City a-flutter with Moths" was the truthful heading of one of the articles published on the 17th of July, and the next day the same paper stated "now, after forty-six years, the job which the English sparrow was brought here to accomplish is before him again. Yesterday thousands of the feathered little fellows worked overtime. A sparrow without a fluttering bit of white between his bills was infrequent.

There was one thing that the writers and the entomologists to whom they applied for information failed to record, and that was the fact that the great swarm of *Ennomos subsignarius* which had so suddenly appeared in the city, contained practically no females. I was unable to find any females among the many moths on the sides of the N. Y. Produce Exchange and the Custom House building during July 17 and the day following. The fear expressed that next season the caterpillars will appear several hundred-fold and the destruction will be great unless the pest is successfully fought, is not well founded.

¹ Presented October 17, 1908.

The moths appeared also on Staten Island in considerable numbers, and I collected a few as samples at St. George on July 17. I was fortunate in finding a single female among the lot, for the sparrows had pulled the wings off of and eaten the bodies of all the moths that they could find. The sparrows were also busy about the Custom House and the N. Y. Produce Exchange, and the white wings of the moths were common objects on the sidewalks.

During my entomological experience I have seen two other species of geometrid moths quite common on the lower part of Manhattan Island, or in the thickly settled parts of Staten Island. In June, 1884, the very pretty *Rheumaptera hastata* L., a common species some distance to the north of New York City, was quite plentiful in the city, and often flew into the windows. During the same year it was plentiful on Staten Island. *Cingilia catenaria* Drury is often seen in great numbers in September in the more rural parts of Staten Island, but on occasions after a storm I have found the moths sticking to the fences and house-sides at St. George, for the unfortunate insects were blown against and had adhered to the wet boards.

Local Notes on Young Owls and Hawks¹

BY JAMES CHAPIN

BARRED OWLS, *Strix varia*.

At the meeting of this association in October, 1907, I gave a report of my observations on barred owls found breeding on Staten Island last year. During 1908, though I have had less time to devote to it, I have again tried to keep track of the same birds. Our favorite nest, at Great Kills, which has been watched carefully for two years past and which has probably been occupied for a much longer time, was not used this year, I regret to say, though we saw a barred owl near it on March 8. Perhaps one of the birds was shot. In September, however, I again heard an owl near this place, and I hope to find them nesting next spring.

The nest at Woodrow is in a hole in the top of a large dead tree, and the old owl is usually very reluctant to leave; but on March 29 I succeeded in making it fly by climbing a little way up the tree. On May 3 I went all the way up. The old bird was out at the time, and as I climbed, it came flying back on the opposite side of the tree from that to which I clung. I suppose it could see only my hands, for it flew right at me, scratching my right hand as it passed. This was my first and only personal encounter with an adult barred owl. There were two young birds in the nest, about two-thirds grown, and some feathers of a red screech owl, *Otus asio*, of a starling, *Sturnus vulgaris*, and of flickers, *Colaptes a. luteus*.

Last year I found a barred owl's nest near Richmond Hill; but as a sawmill entered the region in the summer, and all the live trees around the nest were cut down, the owls were evidently dissuaded from reoccupying their old quarters. They probably

¹ Presented October 17, 1908.

nested again in the vicinity, for one was seen on May 3, in a part of the woods not affected by the lumbering operations.

At Green Ridge, in a huge elm, there is, as I stated last year, a nest which has been invaded by a colony of bees. Early this season, before the bees became very active, one egg was laid, and was being incubated at the time of my visit on April 12. Later the bees seemed to drive the owls away, for on May 3 I found that the egg had been deserted and had spoiled, though a barred owl was heard hooting in the woods.

In some cedars near Richmond a barred owl was regularly to be seen in March and early April of the present year, but in spite of a diligent search no nest could be discovered. As expected, I also found one of these owls staying in a cedar grove at Willow Brook. There were practically no cedars with good horizontal branches, so this owl chose as favorite perches trees whose tops had been broken and bent over to a more or less horizontal position. Since the same man who runs the sawmill at Richmond is also cutting out the best of the woods that remain at Willow Brook, this owl, too, may soon have difficulty in finding a breeding place.

Still another barred owl has a roost at Annadale, under which I picked up, on March 15, a number of pellets containing the bones of a crow, a rabbit, *Lepus f. mallurus*, and a star-nosed mole, *Condylura cristata*, as well as the usual mouse and shrew bones. Here too the nest remains to be discovered.

In the woods near South Avenue, at Watchogue, in the night of July 29, I listened to a barred owl giving what might be called its song. This is best written as "who-who to-who, who-who to-who-ah", and is often to be heard before the owls' eggs are laid, though not while the young are in the nest.

Lastly, in the evening of September 13, Mr. Alanson Skinner and I heard still another to the left of the Princes Bay railroad station. In this locality there are probably resident barred owls, though I have not seen them. This would make, in all, nine places where we have located barred owls, and there are probably at

least a dozen, on Staten Island, where these interesting birds nest with more or less regularity. What interferes with them most, as long as they are not shot, is the destruction of the woods, now going on so rapidly in many places.

BARN OWLS, *Aluco pratincola*.

Our first visit this year to the barn owls' nest at New Dorp was on April 19. Two owls were in the coop, where seven eggs had been laid, without even an apology for a nest, on the rubbish covering the floor. Alongside the eggs lay a freshly killed meadow mouse, *Microtus pennsylvanicus*.

My next inspection was on May 5, very late in the afternoon. One young bird had appeared, and it set up a vigorous peeping as soon as it was deserted by its parent, while in one of the six unhatched eggs I could hear a similar note produced by another young owl within. On May 10 Mr. Howard Cleaves paid them a visit. Something had evidently happened to the first two young birds that hatched, for he found only four eggs, and one very newly hatched owlet.

Mr. Taylor, who was now in charge of the barn, would not let us go up inside when we came on June 21, but Mr. Cleaves climbed up on the outside of the pigeon coop, and scared out one old owl, while he could also hear the hissing of the young birds in the coop. Just outside the entrance lay an addled egg, which the owls had apparently tried to dispose of, and some meadow lark feathers. From the remains of birds occasionally found around this nest, it is shown that even this species of owl cannot be said to feed exclusively on small mammals.

From time to time I have heard of white owls that had been seen or shot about buildings on Staten Island, and some of them must have been barn owls. Several years ago one is said to have been killed at a burning barn near Rossville. This particular individual is reported to have been "stuffed," but I have not as yet been able to locate its remains.

On May 30, 1908, Mr. Thomas Flynn pointed out to me an old

barn near Green Ridge, in which he said a "white owl" had been seen a few days before. Upon investigation, I found, on the floor of this barn a number of pellets, which, from their size and consistency, I am practically sure were disgorged by a barn owl; but though I have looked in this barn many times since, I have never seen any owl in it, or found any more pellets. From this I concluded that this "white owl" may have shared the deplorable fate of most of the others about which I have heard.

RED-SHOULDERED HAWKS, **Buteo lineatus*.

During 1908 we actually found the nests of only two pairs of red-shouldered hawks, mainly because of the lack of sufficient time to search for more. One of the two pairs found breeding last year near Eltingville, nested again within one hundred and fifty yards of their old home. The new nest was thirty-five or forty feet up in a red oak, *Quercus rubra*, and, on April 5, contained three eggs, on which the old bird had not yet begun to sit. By April 17 the number of eggs had been increased to four, and incubation was under way.

A month later, May 17, there were two downy young hawks in this nest, but one was fully twice the size of the other, the difference being undoubtedly due to age. A few cedar twigs, and sprays of green leaves, as usual, lay on the nest. The latter I brought home, and Mr. C. L. Pollard identified them for me. One was silver maple, *Acer saccharinum* and had fruit on it, one was red maple, *Acer rubrum*, two pin oak, *Quercus palustris*, and three black birch, *Betula lenta*.

Three days later I noticed that the primary quills were beginning to sprout on the wings of the larger of the two young hawks, and this one now sat up and gave a scream of discontent, resembling the ordinary "kee-pou" of grown up red-shoulders. A fresh assortment of leafy twigs, mainly maples, again adorned the nest.

On June 7 the larger of the young hawks had a brown back and streaked breast, with wings from the carpus to the tips of

the primaries about seven inches long, while the smaller one was just getting a few dark feathers in the scapular tracts. The ears of both were inhabited by white fly larvæ, the smaller hawk, which I examined particularly, having about four in each ear. Mr. W. De W. Miller, of the American Museum of Natural History, tells me that he has found such parasites in the ears of young broad-winged, *Buteo platypterus*, and Cooper's hawks, *Accipiter cooperi*. In the nest were some small white and brown feathers from young chickens, and some pellets containing snake scales and insect remains, as well as feathers and hair.

The elder of the two young hawks must have left soon after this visit; but, on June 21, the younger one was still sitting on a branch beside the nest. It could scarcely fly at all, and I brought it down for Mr. Lang and Mr. Cleaves to photograph. In the nest were some feathers of young white and Plymouth Rock chickens, a pellet containing the skull of a short-tailed shrew, *Blarina brevicauda*, and some feathers of a young chewink, *Pipilo erythrophthalmus*, and of a sparrow, *Melospiza melodia* (?).

After posing for its picture, the young hawk was left in a small tree.

The second red-shouldered hawks' nest was found in some woods south of Richmond, where no nest was discovered in 1907. It was about thirty-five feet up in a chestnut tree, and held three eggs. The old hawk, though it flew off at my approach, was very bold, swooping at me several times as I sat in the tree. The nest was some distance out from the trunk, and not very securely placed. At my next visit, May 3, I found that it had been dislodged, whether by human agency or not I could not tell, and was lying on the ground beneath. No trace of eggs was discernible.

On May 10 Mr. William T. Davis and I found another red-shouldered hawk's nest in the same woods, which, I am satisfied, was the second attempt of the pair of hawks just mentioned. The nest was now built about thirty-five feet up in a scarlet oak.

Quercus coccinea, and there were three eggs in it when I first climbed up, a week later. These eggs were of a pale bluish color, with no distinct spots, while the eggs in the first nest had been of normal coloration, with the usual brown markings.

At 6.30 a.m., on May 20, while it was raining, I walked up and tapped the tree without making the old hawk fly off the nest. Ordinarily it would have left as soon as I came near, but it seemed to know that the rain would injure the eggs, so I made no attempt to climb the tree.

One egg had begun to hatch on June 3, and on the 7th there was a downy hawk in the nest, while the second egg was opening. The hind legs of a frog, *Rana* sp.?, were in the nest. These hawks evidently were not acquainted with the human custom in regard to the eating of frogs, but rudely devoured the legs last.

On June 18, this nest was found to have been thrown out of the tree, this time plainly by human beings. There was no sign of young birds on the ground with the nest.

During the rearing of their young, red-shouldered hawks customarily cover the top of the nest with twigs bearing fresh green leaves. Whether they do this merely for ornament, or for some other purpose, I cannot even guess; but it is certainly a most effective method of keeping the nest clean. All excrement is, of course, deposited over the edge of the nest; but there is still a lot of refuse, remains of food, and the sheaths that fall off the growing feathers, to be disposed of. Examination of the lining of a nest after the young hawks have left shows it to be composed of alternate layers of leaves and rubbish, while the top is comparatively clean.

Certainly no RED-TAILED HAWKS, *Buteo borealis*, breed on our island, yet adult birds of this species were observed as late as April 12, April 20, and May 3, 1908, at New Dorp, Annadale, and Richmond respectively.

SPARROW HAWKS, *Falco sparverius*.

In early June, 1905, on two occasions I saw a pair of sparrow

hawks around a large cherry tree on Tyson Lane, New Dorp. One of them swooped down excitedly in my direction several times, but, though I climbed the tree, I could not find the nest. A year later, near the same place, a sparrow hawk again flew at me, but this time I could not even see in what tree the nest was to be looked for.

On May 24 of the present year, a female flew out of a large elm in an open field at Green Ridge. Its mate soon appeared, with food in its claws, and they showed considerable anxiety at my presence. The tree contained a number of holes, excavated mainly by flickers, but, while I was near, the hawks would not reenter their abode.

The nest was found on May 30 to be in a hole made by the breaking off of a branch, on the westerly side of the tree, not more than twenty-five feet up. There were three eggs, of a light buff ground color, finely speckled with rufous spots, lying on the chips of wood in the bottom of it. In the same tree were a couple of starling nests, which the young were just leaving, and one flicker's nest. On June 7 the sparrow hawks' eggs were found to number four.

At 8.15 p.m., July 1, three young sparrow hawks were found in this nest, and examined by the light of a match. The fourth egg had disappeared. No old bird flew out at our approach, so I presume that they do not spend the night in the nest at this stage of the proceedings.

On July 12 the young hawks' primaries were about $1\frac{1}{2}$ inches long, but their tails somewhat shorter, while brown feathers were growing out on their backs and breasts. Their beaks were of a dull whitish color, very different from the bills of the young red-shouldered hawks, and the nostrils were noticeably round, with a little tubercle in the center of each. One of the young hawks while being handled uttered a hoarse imitation of the common "killy-killy-killy" of its parents. Part of the back and legs of a small bird, probably a small sparrow, was in the nest.

On this date one of the young sparrow hawks was taken to my

home, and kept a week, being fed mainly on house mice, *Mus musculus*. It could eat comfortably about three mice per day, hair and bones included. Many of the mice were immature, and most of their bones must have been digested by the young hawk, for it disgorged only a few pellets containing hair, and almost no bones. During the week it grew with remarkable rapidity, and, at the end of that time, its whole body was clothed in winter plumage, with only a little down still adhering to the tips of the new feathers. Fast as it had grown, however, I found when it was put back in the nest on July 19 that it was not quite as large as the other two. All three young sparrow hawks were, to judge from their plumage, females.

There was also a corresponding difference in the tempers of the young hawks. The one I had kept at home was perfectly tame, and would undoubtedly have made an interesting pet, could I have devised a satisfactory method of procuring food for it; but the other two, when taken out of the nest, would do little except turn over on their backs, and present their open claws as traps for unwary fingers. Knowing the fondness of sparrow hawks for grasshoppers, we offered some to the young birds. The tame one ate about six, with evident relish, but the others refused to be fed.

All three sparrow hawks were put back in the nest, and within a very short time were probably able to fly. On September 13, in a neighboring pasture, three sparrow hawks were seen, which were undoubtedly part of the family found in the elm tree. In September, 1907, I recollect a similar flock of sparrow hawks that seemed very much attached to these same fields, and had probably come from a nest in the vicinity, perhaps in the very same elm.

Comments on the Contents of a Grebe's Crop¹

BY HOWARD H. CLEAVES

On Wednesday, November 4, there was brought to me a horned grebe *Colymbus auritus*, which had been shot at Princes Bay, Staten Island, on the same date.

I skinned the bird, and through curiosity opened its crop to determine its contents. Of shrimps there were several. I found also the somewhat mangled remains of a number of "spuring" or silversides. I then found what seems to be the body of a young mossbunker, which was pretty well preserved. Most interesting of all was a rather large red rubber band. These were distributed through a mass of more thoroughly digested food. There were many very small, white pebbles, which evidently aided in the process of digestion.

A large part of the mass mentioned above consisted of what I finally made out to be feathers. There must have been many of them. Mr. James Chapin tells me that he has ascertained from Mr. Waldron De Witt Miller, of the American Museum of Natural History, that it is a regular habit with the horned grebe to pluck feathers from its own body and swallow them. He could, however, give no explanation of the purpose of the grebe in doing so.

Mr. Chapin suggested that the grebe probably mistook the red rubber band for a sandworm when it was swallowed, and that is the most likely explanation, although I did not find the slightest remains of any true worms. It would seem they should have been discovered if they form a part of the grebe's regular diet.

¹Read at the meeting of the Section of Biology, November 14, 1908.

Observations on Staten Island Moles¹

BY WILLIAM T. DAVIS

A star-nosed mole, *Condylura cristata* L., was found on October 20, 1908, near Rossville on the farm of Mr. Isaac Wort, who has kindly given me the specimen. When discovered it was digging near a spring in the low, wet ground. This species was included in the "Preliminary List of the Mammals of Staten Island" (*Proc. Nat. Sci. Assn. S. I.*, Extra No. 3, Aug., 1885) on the authority of one specimen seen on the ice at Silver Lake by Mr. Schultze. Mr. James Chapin has found several skulls of this mole in the pellets of the barred owl. They may be told from the skulls of the common mole by having 44 teeth instead of 36, and in being more elongate.

Some years ago, on the 10th of October at 11.15 a.m., I observed a common mole, *Scalops aquaticus* L., under the loose sand at Richmond Valley. After watching it for a time, I jumped suddenly and captured it. It was eating a millipede at the time, which it did not at first relinquish. I placed it on the surface of the ground and it remained quiet for so long that I imagined it had been injured. After a while, however, it commenced to dig, and it required a little over a minute to get below the surface, though the ground was loose and sandy. It very shortly came to the surface again and moved to a new spot. Here in about the same length of time it was out of sight, and appeared to travel in a corkscrew fashion straight down into the loose soil. After it had gone a little way, I dug carefully after, and followed it about a foot below the surface; it was digging quite fast after the first few inches had been made, or until it got below the matted roots near the surface. This mole did not appear to be fully grown.

¹ Presented November 21, 1908.

One afternoon on a cloudy, rainy day, also in the month of October, I found a common mole among some stones near Silver Lake, and stood still to watch it. It moved stones a foot square that weighed five or six pounds as it burrowed beneath them, and they were uplifted with considerable violence. In making its burrow it dug at first to one side and then to the other.

Thoreau mentions a star-nosed mole which he carried to a plowed field "where he buried himself in a minute or two." He says also "I see deep indentations in his fur, where his eyes are situated, and once I saw distinctly his eye open, a dull, blue (?) black bead, not very small, and he very plainly noticed my movements two feet off. He was using his eyes as plainly as any creature that I ever saw. Yet it is said to be a question whether their eyes are not merely rudimentary." Nevertheless, in a common mole which I found dead the eyes appeared as two small black specks that did not come through the skin. The hair was carefully pulled out about these eye spots, so that they could be examined. Neither this specimen nor another that I subsequently found dead, also on the surface of the ground, showed any signs of having been injured.

It was nearly twelve o'clock on the 6th day of April, 1889, when I came to a little clearing and garden spot in the woods near "Sandy Ground" at Pleasant Plains. I observed a curious red-striped object in the garden, and drawing nearer discovered it to be a woman sitting motionless on the ground with a hoe raised above her shoulders as if about to strike. She was dressed in a combination garment of hood and cloak, made all in one piece, and had dark eyes and features as if related to some of the old time Indians who are known to have last lived on this sandy part of our island. She explained with much animation, that a mole always came to the surface just at noon, and as it was nearly noon, she was waiting to cut in two with the hoe, as soon as he appeared, the mole that had dug up her early peas. There are many fortunate delays in this world, and the one for that mole, was that which prevented him from keeping his traditional appointment, just at noon, on that bright April day.

Notes on the Purple Sandpiper and Hooded Merganser¹

BY JAMES CHAPIN

For several years past I have made frequent visits, at all seasons, to the beaches on the south side of Staten Island, but without seeing a purple sandpiper, *Arquatella maritima*, until the present autumn. This sandpiper, indeed, is admitted to be uncommon even on Long Island, but as it is more or less resident in this latitude in winter, an occasional individual might be expected to visit our shores. On the 3d of November, 1908, as Mr. H. H. Cleaves and the writer were landing on the beach near Great Kills, one was seen on a mud bank, not twenty-five feet from our rowboat. Perhaps it was not accustomed to being approached from the water side, for the boat drifted to within fifteen feet before it decided to take flight. At this distance even the orange base of the bill, and the brownish yellow feet were plainly visible to the naked eye. It disappeared up the beach, but was later noticed flying over to Crooke's Point, where it alighted on the sand, and where it was afterward collected.

The hooded merganser, *Lophodytes cucullatus*, is one of our less common ducks. The writer had never seen a Staten Island specimen, either alive, or in any of the private collections of mounted birds he had examined; but on Monday, November 2, 1908, a young male of this species was shot in Wolfe's Pond, Princes Bay, Staten Island, by Mr. Joseph Woodward. It was one of a flock of four, swimming in single file, in the upper end of the pond. The leader may have been an adult male, for it was much more brightly colored, according to Mr. Woodward, than its companions.

¹ Presented November 21, 1908.

Geological Notes in Connection with a Recent Lawsuit against the City¹

BY ARTHUR HOLLICK

Those who are familiar with the region in the vicinity of the Moravian Cemetery may recall the location and general appearance of a certain plot of waste land lying south of the Todt Hill Road and extending to the Richmond Road near the top of Red Lane. The surface slopes down to the Richmond Road and is deeply furrowed, partly by recent excavating operations and partly by the action of the rains. It is not a very attractive looking piece of property and its most prominent feature is a deep gully, extending from road to road near the western end, which has been eroded through the soft limonite iron ore forming the surface and for some distance into the weathered soapstone beneath. This gully has always been the natural outlet for a large part of the storm water from the Todt Hill Road and the land immediately adjoining. It presents practically the same appearance today as it did when I can first remember it, for the reason that erosion has produced but little appreciable effect since the time when the relatively hard soapstone rock was reached, which must have taken place prior to the date of my earliest visit, some thirty years ago. It has been known for a generation at least as a good collecting place for certain minerals, especially limonite, both earthy and in the form of "shot ore," talc, and chlorite.

During the year 1896 I had occasion to make an examination of the region and this gully in particular, while engaged in collecting data for a geological map of the island, which was subsequently included in New York City Folio No. 83, Geologic Atlas of the United States, issued by the United States Geological Sur-

¹ Presented December 19, 1908.

vey in 1902. At the time when the examination was made, a seam of chlorite was found in the bottom of the gully, from which I collected specimens for our museum and recorded the location in my field notes, in connection with which I shall have something further to say later on.

In 1899 the Todt Hill Road was regraded so as to discharge the surface water into the old gully by means of a pipe culvert. As a matter of fact this did not alter the original conditions to any extent, so far as the discharge of surface water was concerned; but parties who subsequently came into possession of the property objected and sued the city, alleging that *during the past two years* the land had been damaged by erosion to the extent of \$5,000, besides which they had suffered the loss of "precious minerals" to the amount of \$20,000, the latter being specified in their bill of particulars as "pigment for the manufacture of dry and oil paints of several colors and shades," evidently meaning the red and brown earthy limonite which is distributed more or less irregularly over the surface. Upon this was placed a valuation of \$4.00 per ton and *5,000 tons were claimed to have been washed away*. Inasmuch as the claim was for loss during only two years this implied an erosion of 2,500 tons per year, or approximately 200 tons per month or *about 6½ tons per day*. But further than this, 5,000 tons of the material claimed to have been lost would fill the gully to the level of the adjoining land and leave some over for good measure; so that in order to account for this loss the only possible inference would be that the gully from top to bottom and end to end must have been eroded during the past two years.

The suit was preposterous and ridiculous on its face, but it was just as necessary for the city to prepare and to formulate a careful defense as it would have been if the claim had been a valid one, and I was called upon to assist in the matter. My recollection of the earlier conditions was quite clear, but someone else might have recollected something entirely different, so search was made for the chlorite seam in the bottom and it was

found occupying the same relative position to the bottom as recorded in my note book for 1896. *This was definite evidence, which could be sworn to if necessary, that no appreciable erosion of the bottom of the gully had taken place since 1896*, and whatever loss of the surface material might have been sustained could only have been due to such as was washed in from the sides by rain-water falling on the land of the plaintiff. This surface material, consisting of earthy limonite, was the only material claimed to contain "precious minerals," and as a matter of curiosity an attempt was made to obtain some idea of its extent or amount within the area of possible erosion into the gully. Five holes were dug down to the soapstone at more or less widely separated locations and the depth of the limonite was measured. These measurements were respectively 2 ft., 2 ft. 6 in., 2 ft. 5 in., 2 ft. 9 in., and 8 ft. A liberal estimate of the possible amount of such material eroded during the past two years was calculated at about one-half ton. It would be of great interest to know the original location and depth of the material representing the 5,000 tons claimed to have been lost, and where it is now located or distributed. This is a rather large mass of solid matter to disappear in so short a space of time and leave no trace behind.

Incidentally may be noted the following analyses of the limonite, made in connection with the case by Professor H. T. Beans, of Columbia University:

SAMPLE NO. 1. SHOT ORE

	Per Cent.
Fe ₂ O ₃	61.97
H ₂ O, combined	9.56
H ₂ O, hygroscopic (105° Cent.)	2.44
SiO ₂	9.87
P	0.087
S	0.066
Metallic iron 39.48 = 789.6 lbs. metallic iron per ton of 2,000 lbs. ore.	

SAMPLE NO. 2. EARTHY ORE

	Per Cent.
Fe ₂ O ₃	66.38
H ₂ O, combined	8.20
H ₂ O, hygroscopic	2.14
Metallic iron 42.29 = 845.8 lbs. metallic iron per ton of 2,000 lbs. ore.	

It may also be pertinent to remark in closing that when the case was called for trial at the October term of court the plaintiff failed to put in any appearance and the case was dismissed.

Staten Island Grouse Locusts¹

BY WILLIAM T. DAVIS

In the list of Orthoptera found on Staten Island, printed in *Entomologica Americana* in April, 1889, six species of grouse locusts are mentioned. Since that time considerable advance has been made in the study of these grasshoppers, and we are now able to report thirteen species or forms as having been found on the island.

In *Psyche* 15: 25. Ap., 1908, Prof. A. P. Morse gives an account of a small collection of grouse locusts sent to him for examination, and he there describes a new species taken on Staten Island and in New Jersey. To Prof. Morse we are also indebted for determinations and for passing on those already made.

About one hundred specimens have been collected on the island, which is practically all that have been seen. An examination of them gives rise to some uncertainties, and one is moved to acquit orthopterists from all blame in holding diverse opinions concerning these variable little grasshoppers.

Grouse locusts survive the winter as mature insects, and are therefore most noticeable in the fall and spring. They are preserved from their enemies by being protectively colored, but this does not prevent their destruction by forest fires. A great many must thus be destroyed annually, and probably it would be difficult to find again on our island all the species or forms here mentioned.

Nomotettix cristatus Scudd. April, May, June, August, September, October.

Nomotettix carinatus Scudd. Two specimens of this long-winged form have been collected on the island.

Neotettix femoratus Scudd. June, August.

Tettix granulatus Kirby. April, October.

¹ Presented December 19, 1908.

Tettix ornatus Say. April.

Tettix triangularis Scudd. May, August.

Tettix arenosus Burm. April, May, June, July, October.

Tettigidea davisii Morse. April, June, August. Also collected at Perth Amboy, N. J., May 31, and Jamesburg, N. J., August 31.

Tettigidea acuta Morse. Male and female taken some years ago in April. Prof. Morse says of these specimens: "These are the first examples I have seen since the preparation of the original description which was based on specimens in the Scudder collection taken by or secured from Uhler and labeled simply 'N. Y.'"

Tettigidea parvipennis Harris. April, May, June, July, October.

Tettigidea parvipennis pennata Morse. This long-winged form has been collected in April, May, June, September.

Tettigidea lateralis Say. March, October.

Tettigidea lateralis polymorpha Burm. This short-winged form has been collected in October.

Charred Wood in a Concretion¹

BY WILLIAM T. DAVIS

Last October while examining the cliff facing Raritan Bay at Morgan's, N. J., I found a small broken limonite concretion that contained and had been formed about a piece of charred wood. The cavity in the concretion is five-eighths of an inch in diameter, and where the wood has been removed the imprints of five annual rings are to be seen. These impressions were made when the iron concretion was formed about the piece of wood and are very plain. We have found charred wood in the clay at Kreischerville, and Dr. Hollick in the PROCEEDINGS 1: 21. Jan. 1906, gives some interesting observations concerning this wood, which was charred by fire before the advent of man. This concretion, however, is of a much later date.

¹ Presented December 19, 1908.

Two Additions to the List of Birds Known to Breed on Staten Island¹

BY WM. T. DAVIS AND JAMES CHAPIN

The hairy woodpecker, *Dryobates villosus*, though of common occurrence in adjacent parts of New Jersey, is much less abundant on Staten Island, and only occasionally to be seen there even in the autumn and winter. It was not included in Dr. Hollick's "Preliminary List of the Birds known to breed on Staten Island," printed in the *Proc. Nat. Sci. Assn. S. I.* for December 1885, and not until last year did the writers see it on the island during the breeding season.

On the 31st of May, 1908, one was observed in a tall tree in the woods at Buck's Hollow, to the north of the village of Richmond. It called continuously and flew about excitedly as long as we stayed in the vicinity, and evidently had a nest near, but this was not found. The place was visited on two subsequent occasions, the last date being June 7, and each time the woodpecker was in evidence and acted as described. It is therefore quite certain that this species is to be added to the list of those breeding on Staten Island.

Another bird found breeding for the first time on our island last summer is the rough-winged swallow, *Stelgidopteryx serripennis*. Reports of bank swallows' nests at Princes Bay probably refer to the rough-wing, for the bluff there is so stony as to be very unsuitable for excavation by bank swallows. At all events the fact that the rough-winged swallow does breed there was established by our finding a nest in a hole in the bank, on June 24, 1908. The two parents were engaged in capturing small flies along the beach and carrying them up at short intervals to the young, six in number. These nestlings were later photographed by Mr. Howard H. Cleaves, and were apparently reared successfully, for the empty nest was afterward examined. It appeared to have been built in an old kingfisher's tunnel, now only about fourteen inches deep, this shortness being probably due to erosion of the bank.

¹ Presented January 16, 1909.

The Influence of Climate in Producing Aberrations in *Lepidoptera*¹

BY GEORGE FRANCK

Since the beginning of the study of insects, or since entomology became a factor in science, the question of variation and aberration in insects has been a matter of vital interest to entomologists. Many volumes have been written in exploitation of various theories and the question is still debatable. Some of these theories are partly substantiated by experimental evidence, gained through the researches of certain eminent entomologists, foremost among whom is Dr. Standfuss, of Switzerland, who, through his valuable experiments, has proven his theories to have the foundation of facts.

The ideas and theories advanced have resulted in two schools or factions. One school adopts the theory that variations and aberrations are dependent on the food plant or the influence of some abnormal condition in the food plant, and supports it by some evidence. The second attributes variations and aberrations to atmospheric and climatic influences and this hypothesis seems to be better supported, at least in so far as practical results count in substantiating a theory.

This article is intended to interest our own entomologists in experimental study, to induce a freer record of their own observations, and to encourage any inclination to clear up this mystery. For illustration I may cite some experiments carried out by prominent entomologists of the Old World, since comparatively little has been done in this country to solve this question. Mention should, however, be made of Dr. O. Seifert, and of Prof. William M. Wheeler, now of the Bussey Institution.

Referring again to the school which endeavors to prove that

¹ Read before Section of Biology, February 13, 1909.

variations and aberrations result directly from the food plants, etc., I may cite Dr. Paul Salowiou, of Warsaw, whose experiments with pupæ of *Vanessa urtica*, subjected to poisonous fumes or directly brought into contact with different poisonous substances, are here summarized.

Pupæ painted with tincture of iodine—all died.

Pupæ kept in sulphur powder—all emerged normal.

Pupæ subjected to the fumes of sulphuric ether—all died.

Pupæ subjected to the fumes of oil of mustard—all died.

Pupæ left in water twenty hours—all died.

Pupæ coated with ink—all emerged normal.

Pupæ laid in salt—emerged normal.

Pupæ placed in caustic ammonia—emerged normal.

Pupæ subjected to ammonia fumes—partly died and partly emerged normal.

Of all the above trials not a single instance is recorded crowned with success.

In the experiments of Dr. H. Auel and E. Gerwin on *Psilura monacha* the theory advanced is that *monacha* was originally white, like its near allies, but by gradual evolution attained its present form. Experiments with food plants such as oak, pine, linden, elm, produced normal forms while individuals raised on nut trees, especially walnut, displayed decided variation into melanic or darker forms, in one special case almost black. Auel goes further in claiming that the dark forms bred true exclusively, but he does not state whether the larvæ were again raised on walnut, the same food plant, or not. Nor is Auel alone in this observation, as even Dr. Standfuss claims hereditary conditions for melanic forms.

Otto Meissner, of Dresden, thinks that more aberrations are observed near the larger cities than in the open country. He further claims that sulphuric acid, produced by the burning of hard coal, is responsible, in his estimation, for this fact. Dr. Karl Flach, by experiments, in overfeeding and underfeeding various Saturnidæ (*Saturnia pavonia*, *S. pyri*, *Samia cecropia*),

produced totally different results. While a well-fed specimen was more thickly scaled, darker and richer in color, etc., one that was underfed was lighter in color and thinly scaled.

Many other experiments of European entomologists could be cited, as for instance, with plants subjected to aniline dyes and other abnormal solutions. These experiments have been tried repeatedly without any tangible results. The few instances I have cited, will, however, suffice for the present. I cannot say that I am satisfied with the results attained by this school. In their work the speculative element is predominant and the facts are not conclusive.

Let us now consider the other faction or school, which claims that aberrations are the result of climatic conditions. The work of Dr. Standfuss shows the most remarkable results. By subjecting the pupæ of various species of *Vanessa* to different degrees of heat, he obtained a regular series of aberrations in *V. io*. He recorded series of hundreds of specimens showing variation, some without eye spots, others showing partial suppression of the latter, etc., and some nearly producing the stem form of *V. urtica*, showing undoubtedly that all these nearly related species can be traced back to one primitive form, similar to *V. urtica*, which in the course of thousands of years of gradual evolution has produced the now distinct species of *io*, *polychloros*, *xanthomelas* and others. *V. antiopa* is also a species that is very likely to show excellent results of this kind, as large series of aberrations, due to subjecting the pupæ to both heat and cold are known to exist. Strange to say, the results of Dr. Standfuss were almost identical, although all specimens under my personal observation could be easily traced to the medium which produced the aberrant forms, viz., heat or cold, the individuals subjected to cold being thinner scaled. Dr. Standfuss has proved, beyond a doubt, that a certain percentage of heat or cold will result in certain definite variations, and has named a number of varieties or forms, which are, so to speak, manufactured to order. This is a remarkable achievement in science and goes far toward proving his ideas correct.

In a letter to me Dr. Standfuss expresses his satisfaction with experiments on pupæ of *Smerinthidæ*. When his trials are completed, the results will be published. Dr. A. Kraus found a melanic form of an Orthopterous insect on the Bodensee, evidently caused by a more severe climate than that of the natural home of the type, which is southern Italy bordering on the Mediterranean Sea.

In this country Dr. O. Seifert has obtained results similar to those of Dr. Standfuss regarding the genus *Vanessa*, the only difference being that he regards *V. polychloros* as the stem form. The difference between this species and *V. urticæ* is, however, very small, and further experiments by Dr. Seifert will, no doubt, verify Standfuss' observations. His own experiments on the genus *Arctia* are wonderful, and one interested in this subject will do well to read his various articles published from time to time in the *Journal of the N. Y. Entomological Society*, *Canadian Entomologist*, and the *Entomological News*.

In a paper read before the Brooklyn Institute of Arts and Sciences and also before the Brooklyn Entomological Society last year, I mentioned my observations on *Satyrus alope* and its forms, which seem to support this theory, and exhibited a number of specimens taken at different elevations in New York State. *Alope* is the lowland type form and as soon as a certain elevation is reached this is replaced by *nephele*. No *alope* is found in the higher regions and no *nephele* in the lower, while intergrades between the two forms can be obtained in numbers about half way up the mountains, thus substantiating the theory that aberrations are produced by climatic changes.

If this paper encourages some of our entomologists to undertake experiments in this particular line, it will have fulfilled its purpose, and I shall most assuredly be pleased to hear of any results that may be obtained in the future.

Notes on a Captive Saw-whet Owl¹

BY HOWARD H. CLEAVES

On Sunday, February 7, 1909, it was my good fortune, in company with Mr. James Chapin, Mr. Alanson B. Skinner and Messrs. George and Isaac Wort, to come upon the roost of a saw-whet owl, *Nyctala acadica* (Gmel.), near Woodrow, Staten Island. It was in a mixed growth of small cedars and sweet gums that the roost was discovered, the cedars being the trees used chiefly. On the ground under these trees were found numbers of pellets, the size of which told very plainly that they were those of a saw-whet owl.

Mr. Skinner discovered the owl itself only a short way off while the rest of us were examining pellets and looking for other roost trees. It was perched in a cedar and had been intently watching our movements. Mr. Skinner attempted several photographs with his pocket kodak, but, owing to the very poor light which prevailed at that time of day (late afternoon), they were practically useless.

It was decided that an attempt to catch the owl should be made. It could be approached to within about six feet, when it would fly some distance and light again, sometimes in a sapling and again on the ground. After perhaps half a dozen of these short chases had taken place, the owl was gradually surrounded on all sides by the members of the party. Slowly we closed in on it, each person standing perfectly still when the owl looked in his direction, but advancing when the owl turned his head to look at another. He could not watch all at once, and became so confused that a sudden rush from the rear by George Wort resulted in a capture.

Since the time that he lost his freedom I have had the owl in

¹ Presented February 20, 1909.

captivity, and have made observations on his habits as far as time would permit. An unused chicken house was turned into an owlery on my arrival home Sunday evening, February 7. For a perch I secured a discarded Christmas tree (which was a small cedar), and, after trimming the top, stood it erect in the chicken coop.

The first thing that I tried to feed to the owl was a white-footed mouse, which had also been caught on February 7. The mouse was placed in a metal washtub, the bottom of which was covered with hay. It was night when the mouse was liberated; a lantern illuminated the interior of the coop, and I sat quietly in one corner to watch the proceedings. For a time the owl, through somewhat squinted eyelids, watched me from his perch; but, as the mouse in the hay beneath began to rustle about, his manner changed. His eyes were now focused on the mouse, his feathers were drawn close to his body, and his entire appearance was one of preparation. Suddenly he dropped like a plummet into the tub, and I feared that for the mouse all was ended. The whitefoot, however, acted on the spur of the moment, and the owl came up with empty talons. The poor mouse was now so frightened that it cleared the rim of the tub with a single jump, and scurried behind a pile of boards. Here he was allowed to remain until the following night, when I removed the boards and forced him into the open floor space. The owl sighted his prey at once and dropped instantly from his perch, landing on the mouse with deadly accuracy. After a few feeble squeaks, and fifteen or twenty seconds of squirming of the body and lashing of the tail, the mouse was dead. The owl now turned his attention once more to me. That disinterested expression again came into his eyes, and it looked as though the owl were settled down for an all night vigil with the mouse held under his talons. It was apparent that he would not proceed to devour his victim while I was present in the coop, so I withdrew. In the morning no trace of the mouse could be found.

I was now confronted with the problem of supplying live food

for the owl. It was evident that he could be kept captive, perhaps for an indefinite period, but where was the food supply to come from? I went about the neighborhood gaining permission from people to look behind the shutters of their houses and the eaves of their barns for roosting English sparrows. In this way four sparrows were caught at night and brought to the abode of the owl. These lasted only three days, however, and it was essential that more food be procured at once.

In the small village of Princes Bay there stands a chapel, in the garret of which I knew that many English sparrows were in the habit of roosting. On the night of February 12 a sparrow hunt was started in this building. The only entrance to the attic is through a trapdoor ventilator in the ceiling, which is many feet from the floor. A table was moved to a point under the trapdoor, and the top of a shaky stepladder placed on this, lacked nearly five feet of reaching the ceiling. With the assistance of Mr. Skinner and Mr. G. B. Davidson the perilous ascent was, after many misgivings, accomplished, and I returned with four sparrows. These were all released at the same time in the owlery, and one of them was caught at once; the others, for the time being, were ignored. The coop was not visited again until Sunday morning, February 14. The three sparrows had all disappeared, and the owl sat composedly in the tree as if he knew nothing whatever about them.

On the following evening another ascent to the loft of the chapel was risked, and the bag resulting from this hunt was made up of three English sparrows and one European starling. The starling is a bird not much smaller than the owl itself, and I was interested to see what would happen following its release in the coop with the saw-whet. The starling was watched intently for some seconds. Then the owl made a strike at him, but the starling was very lively, and was not touched. The owl became more backward now, but finally made another rather undecided rush at the starling, but again failed to get a hold. At this point, one of the English sparrows which was being held in reserve

escaped and fluttered about the coop. Immediately the owl pursued hotly the sparrow, once chasing him past my head at such close range that the wings of the saw-whet almost brushed my face. Both the sparrow and the starling were now raising such a commotion in the coop that the owl became confused and fastened his talons into the starling instead of the sparrow. The starling made a terrible combination of noises, exercising his lungs to their full capacity; in the meantime flapping his wings, and clawing wildly with his toes. The owl speedily discovered his error, released the starling and went in pursuit of the sparrow, which he soon caught.

After I had had the owl for several days, a way was discovered by which the greater part of the method of devouring the prey could be watched. I have said that the owl would not proceed to eat the sparrows after catching them, while I was inside the coop. At one side of the chicken house there is a shelf, to one end of which the owl generally flew after catching and killing his prey. At the opposite end of the coop is the door through which a person wishing to enter must pass. I found that by placing a lantern midway on the shelf between the owl and the door, one could stand at the door (which was opened a few inches) and, unobserved, watch the owl at his evening meal. The lantern, by the way, was shaded on the side toward the observer. If the sparrow under the owl's claws was very lively, the end was hastened with the assistance of the hooked beak, which would be sunk, catlike, deeply into the throat of the sparrow. After all signs of life in the victim had vanished (which, with sparrows, generally took somewhat over two minutes), eating was begun at the head. The brain cavity seemed to be the thing first sought after, and the crunching and cracking of the skull could plainly be heard at the door. Before the sparrow was dead the owl would hold it in one claw and use the other to stand on. After it was dead the owl stood on it with both feet, thus creating a great leverage, which enabled him to tear off pieces of the victim very easily. These pieces were gulped

down, together with the feathers which were attached to them. Sometimes, when a very large bit was torn off, some difficulty was experienced in swallowing it, and the facial expressions caused by these efforts were very amusing.

After the head had been entirely removed, the general mode of procedure was to turn sidewise on the victim and, grasping them near the base, tear out the large flight feathers of the wings. Sometimes both the wing- and tail-feathers were removed before work was begun on the body; while at others only the wing-feathers were taken out first, and the tail-feathers later. The victim was invariably held on its back while being eaten. Once I saw the owl do a very pretty thing. In the midst of his work he looked up and seemed to decide to fly to the cedar tree a few feet away. He seized the body of the sparrow in his beak, flew to the cedar and there transferred the sparrow once more to his talons.

Two or three times I have looked into the coop and discovered the owl perched in the tree with the body of a sparrow (with the head missing and the wing- and tail-feathers removed) resting in a crotch near by. Several hours later, however, the body of the sparrow would be gone, proving that it had been laid aside only temporarily, or until the appetite of the owl should become sharpened.

When the supply of live sparrows gave out the owl was tried on a couple of dead ones. One was placed in a crotch in the cedar, and in the morning was found on the floor beneath, untouched. Probably it had been dislodged by the owl lighting in the tree. The other dead bird was tied to the end of a string and dragged across the floor, in an attempt to make it look life-like. The owl watched it intently, but did not strike. This might have been because the motion of the bird was unnatural, or because the owl could see the motion of my hand in drawing the thread. The sparrow was now detached from the thread and slid along the shelf about a foot under the owl. This was more effective. The owl's vision followed the bouncing sparrow

until it lay still at the end of the shelf. The owl now assumed a crouching position and suddenly pounced on the dead sparrow, which he devoured later.

All of the pellets thrown out by the owl have been saved. They number nine in all.

These were made from ten English sparrows and one white-footed mouse. Whether this ratio of pellets to food consumed could be followed when collecting pellets under roost trees in the owl's natural environment, I am not prepared to say.

I wish to add further, in regard to the food offered the owl, that he entirely ignored the heads of two fish (flounders), which I tied to branches in the roost.

It is my intention to return this little owl to the patch of cedars from which he was removed two weeks ago. It is hoped that life with him will proceed as before, and that when spring comes he, with his fellows, will return north to mate and rear little saw-whets. His two weeks' confinement has, in a way, brought me close to him. His peculiar mannerisms and varying attitudes and facial expressions have stamped themselves permanently upon my memory; but the thought that will cause the greatest feeling of inward satisfaction will be the readiness with which English sparrows were consumed by this veritable little pellet mill.

Notes on Staten Island Plants¹

BY WILLIAM T. DAVIS

Pinus echinata Mill. Staten Island is the most northeastern station for the yellow pine, and formerly it was represented by a considerable number of trees. The chief groves or localities were on Long Neck; in the valley north of the Richmond Road near Dongan Hills; and quite generally distributed in a narrow belt on the northeasterly side of the Amboy Road from Great Kills to Huguenot. While remnants of these groves still exist, the trees are fast disappearing before the axe and forest fires. What may be considered as an additional station for the tree is in the woods near Betty Holmes' Brook, between Gifford's Lane and Eltingville Road or Seaside Avenue.

Pinus Strobus L. In the same woods mentioned above, but nearer to Gifford's Lane there is a scattered grove of white pines, some of the trees being quite large and evidently old. This species is supposed to be indigenous to the island, and was formerly well represented on Dongan Cedar Hill to the southwest of Clove Valley; at Grant City; and in the woods between Richmond Hill Road and Rockland Avenue. In the last named locality stood the great pine mentioned in the *Proc. Nat. Sci. Assn.* 6: 14. Jan. 9, 1897. This tree was dead in November, 1904, and the bark was found to have been badly burned about its base.

The most flourishing present grove of white pines, which also contains some fine trees, is at the "Old Comp" north of Richmond Valley. As with the yellow pine, there are occasional isolated specimens to be found in various parts of the Island. It may be added that white pines are to be found in the woods at Helmetta and near Browntown, Middlesex Co., N. J., but they are not at all common in that part of the state.

¹ Presented February 20, 1909.

Salix tristis Ait. This bushy willow has been found in the sandy grounds at Richmond Valley and at Tottenville; also one bush at Rossville. Last year two small clumps were discovered on Todt Hill near the old iron mine.

Populus nigra L. On the edge of the bluff at Tottenville and not far from the Billopp House, there is a large tree which we have supposed for some years to be a black poplar. As the bluff is being gradually eaten away by the sea, the tree will no doubt ere long be precipitated to the beach below. Since the immediate upland has been uncultivated for a number of years, many shoots from the roots of the old tree have grown sufficiently large to bear blossoms, but they produce only staminate flowers. All of the trees have rather small leaves, not to be distinguished from those of the Lombardy poplar, but the trees themselves are more widely branching, as the photographs taken by Mr. Romeyn B. Hough and myself on March 8, 1908, clearly show. *Populus nigra* has been naturalized from Europe, but is not a common tree.

Rhus typhina L. Several large bushes of the staghorn sumach were found last summer on "Egypt Island" in the meadows back of Midland Beach. This is as far as I am aware the third present locality on the island where there is a considerable number of bushes. The clump of bushes at Uncle Ed. Wood's Brook, Tottenville, discovered over twenty-five years ago still exists, but the plants are dwarfed and in poor condition. Those on the highest part of the Island at Ocean Terrace are of larger growth, but are not numerous, and the locality is being gradually destroyed. A single bush stood formerly on the westerly side of Forest Hill Road northwest of Richmond, and it has also been reported from Princes Bay. Mr. James Chapin has recently found a large bush near Washington Ave., Green Ridge.

Records of Meetings

SPECIAL MEETING, JULY 21, 1908

The meeting was held in room 309, Borough Hall, New Brighton.

President Howard R. Bayne in the chair.

Thirteen members were in attendance.

The secretary read the following call for the meeting:

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

A special meeting of the Association will be held at the museum in Borough Hall, on Tuesday evening, July 21, 1908, at 8 o'clock, to act on the proposed amendments to Section 2, Article III of the By-Laws, as stated below.

By order of the President,

ARTHUR HOLLICK,

Secretary.

The proposed amendments accompanying the call were discussed serially and certain verbal changes were moved and adopted.

The proposed amendments were then read and adopted as a whole, as follows:

[*Note.*—Matter omitted from the original is bracketed []; new matter is *italicised.*]

“SECTION 2. Active members. Active members shall be members of the Corporation and not less than fifteen years of age. Nominations for active membership shall be made and seconded in writing [at a regular meeting of the Association], and the nominees shall be voted for by ballot at the next [regular] *stated* meeting of the Board of Trustees or at a special meeting of the Board called for that purpose, and three negative votes shall reject. Each active member shall on election pay an entrance fee of three dollars (\$3.00) if elected previous to the [regular] *stated* meeting of the Board in January, or one dollar and fifty cents (\$1.50) if elected at or subsequent to the January meeting and prior to the [regular] *stated* meeting in April, and thereafter annual dues of three dollars (\$3.00) payable at the beginning of each fiscal year. The entrance fee shall be remitted if members be elected *at or subsequent to* the [regular] *stated* meeting in April *and prior to the annual meeting of the Association.* Active members shall be entitled to vote at all meetings of

the Association; to receive free one copy of each publication issued by the Association; [and] to have free admission to the museum and library of the Association *at all reasonable times* [,]; and to *have special terms of admission* to all lectures or other entertainments given under the auspices of the Association."

(The remainder of the Section is unchanged.)

The meeting then adjourned.

REGULAR MEETING, OCTOBER 17, 1908

The meeting was held in reading room of the branch public library at St. George.

First Vice-President William T. Davis in the chair.

About twenty-five persons were present.

The minutes of the annual meeting of May 16, 1908, and of the special meeting of July 21, were read and approved.

The committee on the annual prize competition for work in natural science, open only to pupils in Curtis High School, presented the following:

REPORT

The subject of competition for the school year 1907-08 was "A collection of not less than 100 specimens of Staten Island insects, including at least 50 species and 4 orders."

Five collections were submitted in competition, but only two were in compliance with the conditions.

The collection submitted by Miss Nella Haynes contained about 200 specimens and included 100 species correctly named. Miss Haynes was awarded the prize.

The collection submitted by Miss M. Von Fest showed care and neatness in preparation, especially in connection with the moths and butterflies.

The subject and conditions determined upon for the school year 1908-09 were as follows:

SUBJECT

A collection of the leaves and flowers or fruit of not less than twenty-five native and introduced Staten Island trees, with a written discussion of their respective availabilities for shade, ornamental or memorial purposes.

CONDITIONS

1. The collection shall be made between July 1, 1908, and June 1, 1909, and submitted to the principal of the school not later than June 15, 1909.

2. Each species shall be mounted on a separate sheet of mounting paper, 16½ by 11½ inches in size, accompanied by a label giving the scientific name, the common name if any such is recognized, the locality and

habitat where collected, and the date of collection. If the leaves and flowers or fruit are collected at different times the date of collection of each shall be specified.

3. The accompanying discussion shall consist of not less than 1,000 words, and the following main topics are suggested:

(a) Best trees for certain situations—roadsides, streets, parkways, schools grounds, etc.

(b) Trees suitable for memorial occasions—arbor day, etc.

(c) What may be done to protect and preserve forest and street trees?

Note.—It is desired that the discussion shall deal especially with local species of trees and local conditions.

SCIENTIFIC PROGRAM

Dr. Arthur Hollick read a paper on "The Chestnut Disease on Staten Island." (Printed in full in this issue, p. 125.)

Mr. William T. Davis exhibited specimens of chestnut twigs and branches illustrating the gross characters of the fungus causing the disease and the effects produced. Also photographs of infected trees, taken by Mr. Romeyn B. Hough on September 29, 1908, and one of a healthy tree growing in the vicinity of Linoleumville, and read "Notes on the Chestnut Fungus." (Printed in full in this issue, p. 128.)

Mr. Davis also exhibited specimens and read an account of "A Visitation of Geometrid Moth." (Printed in full in this issue, p. 130.)

Mr. James Chapin exhibited photographs and read a paper on "Local Notes on Young Owls and Hawks," prepared from field notes taken during the early part of the present year. (Printed in full in this issue, p. 132.)

Dr. Arthur Hollick exhibited specimens of coral pebbles showing the effect of water action, and a fragment of coral rock showing the effect of weathering, from Jamaica, and commented on the ability of the natives to walk barefoot over the sharp, jagged surface.

The meeting then adjourned.

REGULAR MEETING, NOVEMBER 21, 1908

The meeting was held in the reading room of the branch public library at St. George.

President Howard R. Bayne in the chair.

About twenty-seven persons were present.

The minutes of the meeting of October 17, 1908, were read and approved.

On motion, the Board of Trustees were authorized, on behalf of the Association, to apply for membership to the Council of Staten Island Clubs.

SCIENTIFIC PROGRAM

Mr. Charles L. Pollard read a paper on "Observations on Staten Island Moles" by William T. Davis, and exhibited specimens of the species mentioned. (Printed in full in this issue, p. 141.)

Mr. James Chapin exhibited specimens and read "Notes on the Purple Sandpiper and Hooded Merganser," recently captured on Staten Island. (Printed in full in this issue, p. 143.)

Mr. George S. Humphrey exhibited a stuffed specimen of a young white seal, a gift to the museum from Miss W. Humphrey, and gave an account of the seal fisheries in the vicinity of St. Johns, Newfoundland, from whence the specimen was obtained.

Mr. Charles L. Pollard exhibited and commented on the dried carcass of a cat recently found in a heater pipe in a residence on Central Ave., Tompkinsville, presented by Mr. John J. O'Doran.

The meeting then adjourned.

REGULAR MEETING, DECEMBER 19, 1908

The meeting was held in the reading room of the branch public library at St. George.

President Howard R. Bayne in the chair.

About twenty-eight persons were present.

The minutes of the meeting of November 21, 1908, were read and approved.

The president announced the adoption by the Board of Aldermen of the city budget for 1909, including an appropriation of \$4,000 for the care and maintenance of the museum and library of the Association.

SCIENTIFIC PROGRAM

Dr. Arthur Hollick exhibited specimens of limonite, talc, and chlorite, from Todt Hill, and read a paper on "Geological Notes in Connection with a Recent Lawsuit against the City." (Printed in full in this issue, p. 144.)

Mr. William T. Davis exhibited specimens and read a paper on "Staten Island Grouse Locusts." (Printed in full in this issue, p. 148.)

Mr. Davis also exhibited and read a memorandum on "Charred Wood in a Concretion." (Printed in full in this issue, p. 149.)

Dr. Arthur Hollick discussed the formation of concretions and geodes and the conditions under which each are formed.

Mr. Charles L. Pollard exhibited and discussed a collection of "burls" from stems of ground hemlock trees, *Taxus canadensis* Marsh., collected on Mount Washington, N. H., and donated by Miss S. G. Kingsley.

Mr. James Chapin exhibited a living specimen of a Carolina bat, *Vespertilio fuscus* Beauv., recently captured in a house in New York, where it was preparing to hibernate. Also a preserved specimen of a Georgia

bat, *Pipistrellus subflavus* (Cuvier), captured in a barn near Richmond. This species migrates southward and does not hibernate here.

The meeting then adjourned.

REGULAR MEETING, JANUARY 16, 1909

The meeting was held in the reading room of the branch public library at St. George.

First Vice-President William T. Davis in the chair.

About eighteen persons were present.

The minutes of the meeting of December 19, 1908, were read and approved.

The curator-in-chief announced the donation, by Mr. Alanson Skinner, of his extensive and valuable collection of articles of Iroquois Indian manufacture, representing implements of warfare and domestic economy, games, ceremonies, etc., now on exhibition in the museum.

Mr. Skinner was called upon and gave a brief account of where and how they were obtained.

On motion a vote of thanks on behalf of the Association was tendered Mr. Skinner for his gift.

SCIENTIFIC PROGRAM

Mr. Charles L. Pollard read a paper, illustrated by diagrams, on "Recent Advances in Our Knowledge of Heredity."

Mr. James Chapin exhibited specimens of pellets disgorged by several species of owls, and read an account of the results obtained from examination of a number of such pellets.

Mr. Chapin opened two of the pellets exhibited and showed the included remains of several meadow mice and a jumping mouse.

Mr. Chapin also exhibited a photograph of young rough-winged swallows and read notes on "Two Additions to the List of Birds Known to Breed on Staten Island." (Printed in full in this issue, p. 150.)

Dr. Arthur Hollick exhibited specimens of *Phragmites phragmites* (L.) Karst., our largest native grass, collected on the border of the salt meadows near Richmond, where it grows to a height of eight or ten feet over quite an area, and forms a conspicuous feature in the landscape.

Miss Mary W. Green exhibited a bedspread, brought from China about 1784 by Captain John Green. It will be displayed as part of the exhibit to be installed by the Arts and Antiquities Committee in the public library at St. George.

Miss Green read the following memorandum:

Captain John Green was born March 30, 1736, O. S., and came to America in his early youth. He was the owner of many ships and a dock in Philadelphia at the time of the Revolution.

With his friend Captain James Craig, whose daughter had married Captain Green's son, he fitted out ships for the Pennsylvania navy, and

was made captain in the Continental navy. He was taken prisoner by the British, paroled in France, and later he brought to America the *Duc du Lauzan* (20 guns) bought of France in 1782. Two of the "Letters of John Paul Jones" published by Congress refer to Captain Green.

He was honorably discharged in 1783, and was a member of the New York Society of the Cincinnati.

After the Revolution he resumed his command of merchant vessels.

He was the captain of the first ship carrying the American flag into Chinese waters. The ship was the "Empress of China," and he made the voyage in record time of one year, in 1784, going through the Straits of Sunda.

He brought the first Shanghai chickens to this country and imported the first set of chinaware direct from China. Watson, in his "Annals of New York," says he has one of the original plates, presumably the last of the set. There are two saucers in the family, however.

This spread he must have brought before his last voyage in 1788. It is said that at the same time he brought and sent to General Washington two tiger skins, for which the General thanks him in a letter still in the possession of the family. Being unable to get to the letter I cannot tell its date.

The meeting then adjourned.

REGULAR MEETING, FEBRUARY 20, 1909

The meeting was held in the reading room of the branch public library at St. George.

President Howard R. Bayne in the chair.

About twenty-one persons were present.

The minutes of the meeting of January 16, 1909, were read and approved.

On motion the Board of Trustees were authorized to take such steps as it might consider advisable and feasible for the participation of the Association in the forthcoming Hudson-Fulton celebration in September.

SCIENTIFIC PROGRAM

Mr. Howard H. Cleaves read "Notes on a Captive Saw-whet Owl." (Printed in full in this issue, p. 155.)

Mr. William T. Davis exhibited herbarium specimens and read "Notes on Staten Island Plants." (Printed in full in this issue, p. 161.)

Mr. James Chapin reported on observations on our local fauna during the winter. In a hollow tree at Woodrow a gray screech owl was found in the upper part and a rabbit below.

Mr. Isaac Wort of Woodrow unearthed a jumping mouse on February 6. Chewinks were seen from time to time during the winter.

The meeting then adjourned.

Proceedings of the Section of Biology

FIRST MEETING, JUNE 17, 1908

At the meeting of the Board of Trustees of the Staten Island Association of Arts and Sciences on June 9, 1908, the organization of a Section of Biology of the Association was authorized. In accordance therewith, the following members met on Wednesday evening, June 17, 1908, at the home of Mr. Charles L. Pollard in Jackson Park, New Brighton, and organized the Section of Biology of the Staten Island Association of Arts and Sciences: Messrs. James Chapin, Howard H. Cleaves, William T. Davis, Philip Dowell, Stafford C. Edwards, Charles L. Pollard.

Charles L. Pollard was elected chairman of the section and Philip Dowell recorder.

It was decided to have occasional field meetings during the summer and regular monthly meetings after October 1. The first field meeting was proposed for Tuesday evening, June 23, at Princes Bay.

Mr. James Chapin showed some plants collected by him during a recent trip in the vicinity of Seaford, Delaware. Of special interest among these were specimens of *Alnus maritima* (Marsh.) Muhl., the seaside alder.

OCTOBER 10, 1908

The meeting was held in the museum, the program consisting of informal reports by members on their experiences afield during the summer.

Mr. William T. Davis showed a number of interesting specimens with comments on each.

Mr. James Chapin showed a skull and study skin of the wood rat from Newfoundland, N. J., and commented on its occurrence in that locality and on the differences between this species and the

Florida wood rat; he related some experiences while looking for birds in southern Delaware and New Jersey; discussed the occurrence of fly larvæ on mice, rabbits, etc., and mentioned the discovery of a skull of the star-nosed mole at Woodrow on Staten Island.

Mr. Howard H. Cleaves related some observations on birds made during a trip by boat to Portland, Maine, more especially regarding the number of species seen, the abundance of each kind, and some of their habits of flight and feeding. He showed also some photographs which he had taken during the summer, among which was one of a giant white oak at Oakwood, Staten Island, which had been struck by lightning during the past summer.

Mr. Alanson Skinner told some of his experiences in the Hudson Bay region, where he had spent the summer studying the Cree Indians. He spoke of various amphibians, birds, and mammals which he had seen during the summer, and showed photographs taken by himself of various localities on Staten Island and in New Jersey.

Dr. Philip Dowell reported some finds of violets and other plants on Staten Island and in the vicinity of Washington, D. C. Of special interest was the finding of *Dryopteris cristata* \times *marginalis* Dav. near Great Falls, Va., in the vicinity of Washington, D. C., whence it had not previously been reported. He had noted that the ferns were more than usually attacked by a leaf-rolling insect, the larva of which had destroyed the tips of many of the fronds especially of the Christmas fern and various species of *Dryopteris*. The larva was determined by Dr. H. G. Dyar of the U. S. National Museum as a pyralid (*Pyrausta* sp.). This attack on the tips of the fern fronds had also been noticed by Mr. Harold W. Pretz, of Allentown, Pa., and commented on in a letter (Aug. 28), in which he said: "Our ferns near home are in poor condition from the attacks of some larva. *D. cristata* \times *marginalis* has suffered very much." It might be added here that the attacks of the larva were made chiefly during the early part of the season.

Mr. C. L. Pollard reported some interesting observations and experiments on hybridization of the Cynthia moth (*Philosamia cynthia*) illustrated with specimens.

NOVEMBER 14, 1908

The meeting was held in the museum.

Mr. C. L. Pollard announced the death of Dr. James Fletcher, a prominent entomologist of Ottawa, Canada.

The acquisition by the Association of a valuable collection of photographs of Staten Island scenery, presented by Mrs. C. W. Hunt and Mr. George S. Humphrey, was commented on by Mr. Pollard. He stated also that the *University of Missouri Studies* had been added to the exchange list of the Association.

The dried carcass of a cat was shown, which had been found in a furnace pipe at 37 Central Avenue, Tompkinsville. It was presented to the Association by Mr. J. J. O'Doran.

Mr. Pollard showed a new museum exhibit, consisting of various kinds of silkworm cocoons, and illustrating the characteristic methods by which various members of this family build their cocoons.

Mr. William T. Davis exhibited a collection of most of the species of *Xiphidium* occurring in the eastern United States. He mentioned the fact that the length of wing is not a good specific character in this genus. He commented on the invalidity of certain species, which had been described on the basis of this character; and also on the occurrence of *X. strictum* at Arrochar, Staten Island. He showed also an insect box of his own make, lined with corrugated paper instead of cork or turf. He stated that Dr. W. A. Murrill, of the N. Y. Botanical Garden, had identified the fungus exhibited at the last regular meeting of the Association as the true chestnut fungus, and that the jelly-like streamers shown by this specimen were mentioned by Dr. John Mickleborough in *Conservation* 14: 585. 1908.

Mr. Howard H. Cleaves read a paper on "Comments on the Contents of a Grebe's Crop" (published in full in this issue,

p. 140), and described the menhaden fishery as carried on in the lower bay.

Dr. Arthur Hollick commented on the same fishery.

Mr. Alanson Skinner showed a Delaware Indian mortar of wood hollowed by fire, from Marlton, Burlington Co., New Jersey; also a red screech owl caught in a hollow apple tree on Richmond Hill, Staten Island, November 14, 1908.

Mr. James Chapin showed an abnormal specimen of the ring-necked snake, *Diadophis punctatus*, captured in New Brighton on May 17, 1907. The whole of the upper parts of this specimen are usually light in color and there is a narrow yellow line along the middle of the back. He showed also an adult female and a young female red-backed mouse, *Evotomys gapperi*, trapped in a small white cedar swamp at the south end of Lake Hopatcong, New Jersey, on August 29 and 30, 1908; also a female long-tailed shrew, *Sorex personatus*, from Helmetta, New Jersey, September, 1908. The skin of a purple sandpiper, *Arquatella maritima*, killed at Crooke's Point, November 3, 1908, was also shown.

DECEMBER 12, 1908

The meeting was held in the museum.

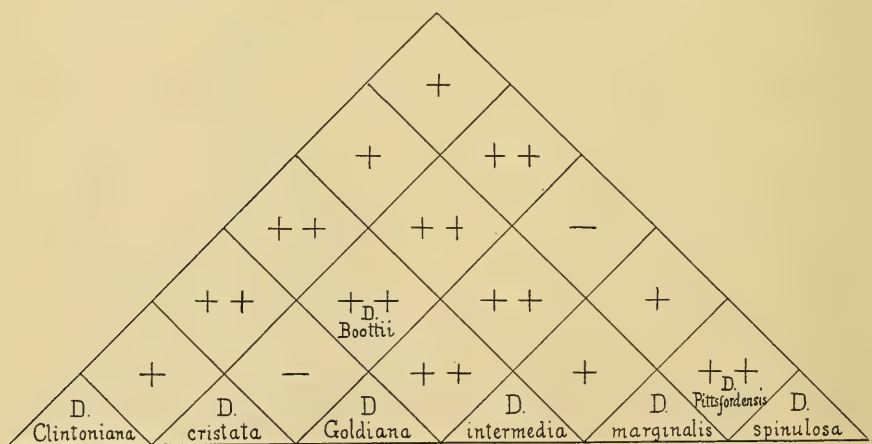
The chairman announced the death by drowning, on December 6, of Joseph H. Painter, Botanical Assistant in the United States National Museum.

The program for the evening had been announced, in advance, in the notices of the meeting, as a symposium on Natural Hybrids among Ferns and Other Plants, the subject to be introduced by Mr. William R. Maxon, Assistant Curator in the United States National Museum. Mr. Maxon first mentioned the fact that he had noticed the fronds of *Dryopteris simulata* Dav. in Maryland attacked by an insect, which had spun a fine web and drawn the pinnæ of the tips together. He spoke next somewhat at length on fern hybrids, referring to the chances for hybridization among certain kinds of ferns and offering a number of suggestions and questions for consideration. He called attention to the fact

that our *Dryopteris boottii* (Tuck.) Und. has often been referred to the hybrid long known in Europe and described by Milde as *Aspidium spinulosum* \times *cristatum*. He mentioned *Dryopteris cristata* \times *marginalis* and the bigeneric hybrid *Asplenium ebenoides* as well known examples of hybrids among ferns. He referred to Miss Margaret Slosson's experiments in which she succeeded in crossing the prothallia of the parent species and producing *Asplenium ebenoides* and *Dryopteris cristata* \times *marginalis*, thus proving these to be hybrids. These were the only native American fern hybrids known until recently; except, possibly, *Asplenium pinnatifidum*, which has been supposed by some to be a hybrid. He next made a few remarks on the recent paper "New Ferns described as Hybrids in the Genus *Dryopteris*," in the *Bull. Torrey Club* 35: 135-140. 20 Ap. 1908. In connection with *Asplenium ebenoides* he reviewed some of the main points in his paper on this fern written some years before (*Bot. Gaz.* 30: 410-415. Dec. 1900). One of the main points brought out in this connection is that although sterility is in general a characteristic of hybrids it may not be persistent in the case of plants long established in a certain locality. Thus, for example, *Asplenium ebenoides* was found growing in abundance at Havana, Hale Co., Alabama, and this could not be well accounted for except on the supposition that the fern was fertile in this locality. This idea of hybridity clears up some of the difficult questions in regard to the identity of many specimens of ferns that have been collected and many that have been met with in the field.

Dr. Philip Dowell replied to some of the questions raised. In connection with the question whether the chances for hybridization are better in the north than in the tropics it should be kept in mind that some species seem to show greater tendency to hybridize than do others. To the question whether the recent work on hybrid ferns be a result of more intensive work in the field, he replied that his own results had been obtained as undoubtedly due to intensive field study. Occasional specimens of hybrid ferns were found in the larger herbaria, but many more

had been found by close observation in the field. In reply to the question whether the limits of variation of these hybrids had been closely studied, and whether the hybrids showed as great variation as the putative parents, it was stated that the hybrids showed a wider range of variation. In some cases it would be difficult to state the correct relationship of a probable hybrid without having a number of fronds from the same plant or from similar plants. In this connection it should be stated that when a specimen shows undoubted close relationship to two different species and stands intermediate in characteristics, sharing the characteristics of the two species, it is very likely that the specimen in question is a hybrid between the two species whose characteristics it shares, and we are justified in describing it as a hybrid. If some one else chooses to describe the specimen in question as a species, or wishes to consider a hybrid a species, he may be entitled to his view. But if he denounces these hybrids as such because they have not been artificially produced and thus have not been proved to be hybrids let him also prove that they are not hybrids. He showed also a diagram representing the fifteen possible hybrids between six species of *Dryopteris*, thirteen of which he had seen (marked with the + sign) and eight of which had been described (marked with ++).



Mr. Charles L. Pollard was the next speaker. He took the stand that we have no right to assume hybrids on the basis of mere appearances and characteristics suggesting relationship, and that the burden of proof rests with those who assume hybrids.

Mr. William T. Davis exhibited specimens of hybrid oaks and reputed parent species and pointed out some interesting facts in connection with them. Among the specimens were: *Quercus heterophylla* Michx., *Q. marylandica* \times *nana* (*Q. brittoni* W. T. Davis), *Q. marylandica* \times *phellos* (*Q. rudkini* Britton), *Q. digitata* \times *phellos*, *Q. nana* \times *phellos*. These served as valuable material illustrating the subject of plant hybrids.

JANUARY 9, 1909

The meeting was held in the museum.

Mr. Alanson Skinner reported having seen some twenty or thirty pickerel frogs, *Rana palustris*, in a spring at Woodrow, Staten Island, earlier in the day. They were rather sluggish, but were not covered up by leaves or any other material. He stated that he had found numbers of green frogs, *Rana clamitans*, in former years hibernating in deep holes in the upper part of Palmer Run in the Clove Valley. Here pipes running from the pumping station of the water works carried warm water which was discharged near the pools and kept the water warm. Others were found under the pipe and close to it.

Mr. C. L. Pollard stated that the pine lizards, *Sceloporus undulatus*, which Mr. Skinner presented to the Association about October 1, 1908, were still alive and active, though they had eaten nothing while in captivity, and they showed no tendency to hibernate, probably on account of the high temperature of the room.

Mr. William T. Davis exhibited some tubers of a species of *Helianthus*, from Oakwood, Staten Island. They were found in numbers under a large log on the edge of the salt meadows. He showed also two specimens of *Orchelimum pulchellum* from Dennisville, Trenton, and Helmetta, New Jersey. This he had recently described as a new species and stated that it is the most

brightly colored *Orchelimum* in our vicinity. Other specimens of the same genus, including *O. erythrocephalum*, were also exhibited.

Mr. James Chapin showed a skin of Brunnich's murre, *Uria lomvia*, which was killed off Great Kills, Staten Island, in the Lower New York Bay, about December 27, 1908, by Mr. Charles Schapp, and commented on the irregularities of the southward migration of this bird. The last important migration was in the winter of 1899-1900, when it was reported to have gone as far south as Virginia. In the fall of 1899 several of these birds were killed in the Lower Bay by Mr. Melville Decker. This year there is apparently a similar abundance of Brunnich's murres in New York Bay, for one was seen off the Battery, by Mr. Chapin, on December 25, 1908, and on the same day about ten birds answering to this description were observed by Mr. Rogers in the Lower Bay and near Sandy Hook. Mr. Chapin also announced that he had found five skulls of *Blarina parva* in about fourteen owl pellets, found at Green Ridge, Staten Island, on May 13, 1908.

Mr. Pollard announced that he hoped soon to have Dr. L. O. Howard as a guest of the Association. He remarked on a recent lecture in Brooklyn by Prof. Edward B. Poulton on mimicry.

This was followed by a discussion on mimicry and protective coloration.

FEBRUARY 13, 1909

The meeting was held in the museum.

Messrs. George Franck and George P. Engelhardt were present as guests.

Mr. C. L. Pollard stated that he had attended the Darwin Centenary exercises at the American Museum of Natural History, on February 12, and suggested that each member attend the exhibition, which would continue until March 12.

Mr. George Franck read a paper on "The Influence of Climate in Producing Aberrations in Lepidoptera" (published in full in this issue, p. 151).

A general discussion ensued on the subject of variation and sex determination.

Mr. William T. Davis read from an article by David Starr Jordan in the *Independent* for February 11, 1909, entitled "Darwinism Fifty Years After," referring to Dr. Arnold Ortmann's words that the four factors of evolution, variation, inheritance, selection, and separation were all concerned in the formation of new forms or species.

Mr. Howard H. Cleaves spoke of the saw-whet owl caught at Woodrow recently and kept in captivity in a chicken coop. A white-footed mouse placed in the coop with the owl was caught by the owl while Mr. Cleaves was present; an English sparrow was also caught by the owl under the same circumstances, and the method of devouring the sparrow was observed by Mr. Cleaves. The owl begins at the head and tears off the wing-feathers. A flashlight photograph was shown of the owl while holding the sparrow in the act of devouring. He exhibited pellets that had been disgorged by the owl, showing something of its diet.

Mr. G. P. Engelhardt remarked on the similar eating habits of the European falcon.

Mr. Pollard exhibited skins of weasels showing winter and summer pelage.

Mr. Stafford C. Edwards exhibited a specimen, presumably a fungus growth on cat dung, found in a cellar, the growth resembling fine black hair.

Mr. Alanson Skinner remarked on having seen a flock of quails at Princes Bay; also a chewink on February 5. In a hollow tree at Woodrow he had found a screech owl in the upper part and a rabbit below. He remarked that rabbits are greatly increasing in numbers. He had recently found at Princes Bay a dead opossum, a very large specimen. Opossums were apparently decreasing in numbers on Staten Island, but increasing on Long Island.

Publications of the Association

1. PROCEEDINGS OF THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND

These PROCEEDINGS were printed in octavo numbers, partly in leaflet and partly in pamphlet form, from November 10, 1883, to June 3, 1905, and were included in nine volumes, separately indexed.

They may be obtained by members and patrons at \$1.25 per volume. To others the price per volume is \$2.50.

Single numbers of back volumes may be obtained at 10-cts. each, except the following, for which a uniform price of 50 cts. each will be charged:

Special No. 21, Vol. V, No. 5, March 14, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. VII, No. 15, March 10, 1900. "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jr. Pamph., pp. 33; pls. i-iv.

Special No. 23, Vol. VIII, No. 25, October, 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

Only a limited number of complete sets of the older volumes are now in stock, and orders for these will be filled in the order of application. The right is reserved to withdraw any part or numbers from sale at any time.

2. PROCEEDINGS OF THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

These PROCEEDINGS are printed in octavo parts, four parts to a volume. They contain the business and scientific records of the meetings of the Association and are sent free to all members and patrons in good standing.

By resolution of the Association all members and patrons may obtain back parts at 25 cts. or back volumes at \$1.00. To others the price is 50 cts. per part or \$2.00 per volume, for both current and back issues.

Volume I, including Title Page, Table of Contents and Index, is as follows:

Part I, June-December, 1905, pp. 1-20, issued April 10, 1906.

Part II, January-May, 1906, pp. 21-69, issued July 9, 1906.

Part III, October-December, 1906, pp. 71-92, issued April 17, 1907.

Part IV, January-May, 1907, pp. 93-136, issued September 20, 1907.

Volume II, Part I, October 1907-January 1908, pp. 1-46, issued October 17, 1908.

Volume II, Part II, February-May, 1908, pp. 47-124, issued September 30, 1909.

Volume II, Part III, July 1908-February 1909, pp. 125-177, issued August 18, 1910.

The Act of Incorporation, Constitution and By-Laws, etc. (Pamph., 8vo, pp. i-xxv, 1906) and the special "Memorial Number," issued in commemoration of the celebration of the 25th anniversary of the organization of the Natural Science Association of Staten Island (Pamph., 8vo, pp. i-xxxvii, 1907), will be sent free on application.

3. THE MUSEUM BULLETIN

Monthly octavo leaflets, containing official notices of meetings of the Association and descriptive items concerning the Museum exhibits. Begun in August, 1908. Sent free on application.

Checks should be made payable to the Staten Island Association of Arts and Sciences, and all remittances and communications addressed to

Staten Island Association of Arts and Sciences,

Borough Hall, New Brighton, N. Y.

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PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION
OF
ARTS AND SCIENCES

[Formerly THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

EDITED BY
PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS
PUBLICATION COMMITTEE

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PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION
OF
ARTS AND SCIENCES

[Formerly THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

VOL. II

MARCH-MAY, 1909

PART IV

Lowestoft Ware¹

BY MARY OTIS WILLCOX

Every one of us knows and loves the pale fragile bluish-white bowl or teapot which tradition tells us "our grandmother brought from home." This china is known as "Lowestoft" and is to be found in quantities all along our eastern seaboard, within easy reach of the ships that brought it. Brought it—but from where? That was the mooted point, and one that was hotly contested by the china authorities of the last century.

Lowestoft is a town on the east coast of England on the North Sea. As early as 1756 a soft paste was made at Lowestoft in imitation of Delft ware, and decorated in blue and white. Some of these pieces are signed and dated and are to be found in museums in England. In the year 1770 we have the following advertisement, "Clark Durnford, Lowestoft China Warehouse, No. 4 Great St., Thomas the Apostle, Queen St., Cheapside, London, where merchants & shopkeepers may be supplied with any quantity of said ware at the usual prices. N. B. Allowance of twenty per cent for ready money."

¹ Presented before the Section of Art, March 10, 1909.

Also there is in existence the original account of a piece of Lowestoft purchased by Josiah Wedgewood, as usual eager for new or better methods for his trade.

But the Lowestoft factory came to an end in 1803 or 1804 owing, it is said, "partly to the severe competition of the Staffordshire potters, partly to trade losses, one of which was the seizure by Napoleon in Holland of several pounds worth of the merchandise in that country," and until recently no traces of a factory in Lowestoft had been found.

Mr. Jewett says "the collector will be able to distinguish immediately between those examples painted at Lowestoft on Oriental body and those which were potted and painted there."

For that was the question over which the collectors wrangled. Did the Lowestoft potters import the undecorated pieces and then paint them, or did they bake the clay also at Lowestoft?

The color of this china is of a pearly tint not quite so blue as the ground of the older Chinese wares. The shapes are exquisite and the colors harmonious. The cups are usually low and of a fat wideness without handles, and the saucers are of the same general shape. The coffee cups are taller and thinner and have handles ornamented with little knobs. The coffeepots and hot milk pitchers are tall, long-necked and graceful, with perky little spouts, and handles stuck on as if by an afterthought. They have lids and these lids are surmounted by a gilded strawberry and the three-lobed leaf of the strawberry plant. The teapots are oblong with flat tops and straight sides. The tea caddies look like the old time tombstone with the addition of a little neck surmounted by a lid matching that of the coffeepot. The cream pitchers are urn-shaped with queer spouts and awkward handles.

The decorations are familiar to all of us; the little delicate red borders of lines and dots and little festoons supported at intervals by a full blown pink English rose and little dabs of green suggestive of leaves. Sometimes the lines and dots of the border resolve themselves into little red vines. Pieces so decorated have either the same rose at regular intervals, but

larger, on the outside, or else, growing from a funny flat flower-pot or basket, the red rose and many buds or smaller blossoms.

Other pieces have the beautiful deep blue border, ornamented with lines and dots and conventional oak leaves or stars in gold on the blue, and bunches of gold-veined blue roses and pinks and other familiar flowers. These blue and gold bordered pieces often have monograms and coats of arms in gold and blue and were made of course for the original owner. Others have on their sides medallions in sepia framed in the same blue and gold of the border. The medallions are true English landscapes, with houses in which Miss Edgeworth's characters might have lived, and the trees are round, full-topped specimens of the English oak, not the pagodas and scraggy willows of the Chinese. Sometimes these little picture decorations are like pen and ink sketches in black and white, but they always preserve the characteristic features of their European surroundings.

I find in the Metropolitan Museum a tea set of Lowestoft, with the blue border besprinkled with gold stars, and a graceful monogram in blue and gold script on every piece. There are no samples of the flowerpot decoration in red and green. These pieces are in the case of English chinās, but the label says Lowestoft is a misnomer as this ware is Oriental in body and decoration.

There are in the Boston Museum of Fine Arts three pieces of "Lowestoft certified to have been made in England." They are less delicate than the pearly hard paste porcelain. They are of a creamy tint and the decorations are bands and veins of pink and gold and bunches of flowers, roses, etc., in their natural colors.

The Lowestoft china was certainly a favorite with our colonial ancestors both north and south. The magnificent dinner service decorated in blue and gold and green with the badge of the Order of Cincinnati, a piece of which is on exhibition in our loan collection, the property of Mrs. Geo. Wm. Curtis, is one of three imported by Mr. Samuel Shaw, a china merchant of Boston.

He served in the Revolution as Aid to Gen. Knox, and at its close he imported one set for Gen. Washington, one for Gen. Knox, and the other he kept. The latter was for many years on Staten Island, the property of the great nephew of the importer. At Mrs. Shaw's death the china was divided among her daughters. I read of two complete sets of china that belonged to Mr. Elias H. Derby of Boston, a very wealthy merchant of that city at the beginning of the last century. His wife came from Hingham, Mass., where with some of his wealth he endowed the Derby Academy, an institution of learning which still flourishes. I know of two saucers and a cup of Lowestoft which probably were part of these sets. One has on it the maiden initials of Madam Derby as she was always called, and the other is decorated with the fine black landscape.

The variety in the decoration of this china is equaled only by the various localities in which it is found, up and down the Atlantic seaboard, treasured in corner cupboards or tucked away on the top shelves of private families, or displayed in the cases of museums, its delicate colors and quaint shapes ever a pleasure to the eye, and the stories of its importation ever a delight to the imagination.

Many of these pieces bear the coat of arms and the initials of the importer himself and yet the place of its manufacture seemed to be shrouded in mystery. And the authorities differ. Did our seagoing forebears get the china in England or the East? Was the body made in China and decorated in Lowestoft? Or did the Lowestoft potters make the body and decorate it, at home? Or did the Chinaman with his aptitude for copying make the body and decorate it after a copy brought from the western world.

Mr. Owen in "Two Centuries of Ceramic Art in Bristol," says: "The tradition that such ware was made in Lowestoft in 1775 rests upon evidence too slight to be worthy of argument. The East India Company imported into England large quantities of porcelain for sale. This particular ware was simply in form

and ornamentation only a reproduction by the Chinese of English earthenware models. The ill-drawn roses, the coarsely painted baskets of flowers, the rude borders of lines and dots, are literally copied from the inartistic painting on the English earthenware of bygone days."

Mr. Chaffers, another china authority, says: "There is such a peculiarity in the form and quality of the Lowestoft porcelain that we are surprised any one at all conversant with, or accustomed to see, collections of china could ever mistake it for Oriental. We are now speaking of the body only; of course the decoration is still more conclusive. Any one who has paid attention to the ornamentation on the Lowestoft china cannot fail to have observed the peculiar touch of an artist who painted the flowers upon it; especially the rose which we so frequently find. These flowers were painted by Rose, and one striking peculiarity in his mode of representing this flower is the appearance of its having been plucked from the stalk and dropped upon the surface, the stalk being seldom represented."

I find that Mr. Prime writes: "There is a large class of porcelains decorated with beautiful but generally stiff bouquets and with vine borders in high relief, which are Oriental and are classed by some collectors as porcelain of the Indies. These are supposed to have been made on special patterns furnished to the Oriental factories by the East India Companies. They resemble European work in the decoration and many of the Lowestoft paintings seem to be imitations of these. It is therefore necessary to be very cautious in classifying wares as of Lowestoft fabric."

Then I find that Mr. Elliott in his "Pottery and Porcelain" says that "much of this ware which is supposed to have been imported from China was really made in Lowestoft," and that "Some of the forms and decorations made at Lowestoft are so like those made in China that it has been almost impossible to distinguish them."

What conclusion do we reach?

The clay was brought from China and decorated in England? The clay was baked and decorated in Lowestoft? The East India Company took earthenware patterns from England to China and had the designs copied, often adding monograms or coats of arms?

These are the three prepositions; all are answerable.

If the clay was brought to England why have we not samples of such porcelains *unpainted*, which we have not.

If the china was purely a product of Lowestoft then there must be evidence that the Lowestoft factories used such hard paste, which there is not.

If the East India Company took patterns to China they were not the common pieces of English make. But they undoubtedly did take designs and pictures, and the ingenious mind of the Oriental copied them faithfully, only occasionally indulging his originality in a queer knob or spout.

Certainly it was a favorite ware with our grandparents, and the merchants who dealt with the East imported it in quantities for the tasteful people of the day.

Since this little paper was written and the loan collection installed in the museum, the reason for the confusion as to the origin has been made clear to us. Years ago, Mr. Chaffers, who is quoted above, visiting the town of Lowestoft, ran across several pieces of the frail bluish porcelain decorated with the coats of arms of neighboring families. The owner assured him that these pieces had been made in the old factory, and he therefore gave the name of "Lowestoft" to the ware.

It is also a matter of great interest to learn that not long ago under a portion of a brewery in Lowestoft there were found several moulds and many fragments of the real English ware.

Local Notes on Migratory Birds¹

BY JAMES CHAPIN

The movements of the migratory birds of the Eastern States are, with few exceptions, so well known that only the minor irregularities now attract our special attention. The following notes are submitted, therefore, for the benefit of local bird students, or the authors of future lists of the birds of the vicinity of New York.

Uria lomvia. Brunnich's murre is noted for the irregularity of its southward migrations, which ordinarily do not reach Long Island, but sometimes extend as far south as North Carolina. One of the most recent of these unusual migrations took place in the winter of 1899-1900, when these murres are reported to have reached Virginia. During that winter several were killed in the lower New York Bay by Messrs. Almar and Melville Decker, of Tottenville, Staten Island; and one of them was presented to the American Museum of Natural History (No. 11581). It is labeled as having been collected at Giffords, Staten Island, on November 18, 1899.

During the past winter Brunnich's murres have been again seen in our vicinity. On December 25, 1908, from a Staten Island ferryboat, I watched a murre, presumably of this species, sitting on the water just off the Battery. Mr. Charles H. Rogers saw a number in the Lower Bay on the same day, as recorded in *Bird Lore's* Christmas Census. Two days later a dead specimen of *U. lomvia* was sent to me, in the flesh, by Mr. Charles Schopp. It had been killed off Great-Kills, and I was informed by Mr. Schopp that others were seen the same day. On January 10, 1909, Mr. S. H. Chubb tells me, he saw two murres from a Staten Island ferryboat, in the Upper Bay.

¹ Presented March 20, 1909.

Porzana carolina. A male Carolina rail, in the plumage of an adult, was shot by Mr. W. Schulz at Jamaica Bay, Long Island, on December 29, 1905, and presented to the writer a few days afterward. Its left leg was slightly kinked, where it had evidently been broken, but was perfectly healed at the time of its death.

Oxyechus vociferus. The kildeer is quite unusual on our island, though it breeds not uncommonly in certain parts of New Jersey. The only examples I have seen on Staten Island are two in number, the first of which was shot on the beach at Oakwood on November 29, 1906, and was exhibited at the meeting of the Staten Island Association of Arts and Sciences in December, 1906. The second was observed at Wolfe's Pond, Princes Bay, November 22, 1908. Though not molested by the writer, this bird evidently met its death soon afterward, for a kildeer in an advanced stage of decay was sent to me about a week later from the same locality. None of the private collections of Staten Island birds I have yet examined have contained any kildeers.

Asio wilsonianus. According to Mr. Isaac Wort, of Woodrow, Staten Island, long-eared owls were formerly much more common on Staten Island than now, occurring at times in large flocks, and furnishing easy targets for gunners, who were fond of practising on them. Mr. Wort tells me that he found a nest in a cedar, near his home, about 1903 or 1904. The writer has seen single long-eared owls at Great Kills, Staten Island, on April 8, 1906, and March 23, 1907, and their presence at such late dates in the spring might indicate that a pair still nested there.

During the past winter (1908-9) though no live owls of this species were observed, the feathers of two individuals killed perhaps by barred owls (*Strix varia*) were found near Princes Bay on December 20, 1908, and January 3, 1909. That the barred owl does eat other owls of such size is shown by my finding the bones of a long-eared or short-eared owl in some pellets picked up under a barred owl's roost at Annadale, in March 1908.

In a cedar grove, near Richmond Valley, on January 3, 1909, some long-eared owls' feathers sticking to the trees, and pellets lying under several of the cedars showed that the grove had recently sheltered some of these owls, though none were to be seen either on this date or the following Sunday.

Dryobates villosus. The breeding of the hairy woodpecker on Staten Island was discussed in a recent number of the PROCEEDINGS. Its rarity here in winter as well as in summer is shown by the fact that the writer, though he has made weekly excursions on Staten Island during the past autumn and winter has noticed but one hairy woodpecker, near Huguenot, on February 21, 1909.

Loxia curvirostra minor. About five crossbills were observed in Robinson's Woods, Great Kills, Staten Island, on December 20, 1908, and about the same number, in the same place, on the 25th.

Acanthis linaria. Notes on the occurrence of redpolls on Staten Island in the winter of 1906-7 may be found in the PROCEEDINGS for March, 1907. On December 20, 1908, a flock of six or eight was seen at Great Kills.

Spinus pinus. During the winter of 1907-8 no pine finches were seen on Staten Island by the writer, but the next winter has again witnessed the abundance of these irregular birds. They have been quite numerous from early November to the date of writing, and are often seen on the beaches, eating the seeds of a goldenrod (*Solidago sempervirens*), as well as in the uplands, where the alders, birches, and sweet gums furnish them with food.

Passerculus sandwichensis savanna. On December 25, 1908, two Savanna sparrows were seen on the beach near Oakwood, Staten Island. This is my second winter record for the island, the first being that of a single individual taken at the same place about January 1905.

Ammodramus maritimus. Seaside sparrows, though very common breeding birds in our salt meadows, generally depart during early November. Mr. Witmer Stone, in the "List of the

Birds of Eastern Pennsylvania and New Jersey," gives a record of a seaside sparrow in southern New Jersey on February 22, but I can find no winter records from further north. On February 9, 1908, as I was walking along the beach near Oakwood, Staten Island, I saw one feeding near the water's edge. At my approach it ran under a cake of ice, but soon flew out again and lit on the sand, where it was "collected." It was an immature female, and had, so far as I could see, no physical defects to prevent it from moving southward for the winter.

Spizella pusilla. Two field sparrows were shot, and several others seen, at Rossville, Staten Island, on February 22, 1906. As field sparrows do not pass northward until about a month later, these individuals had probably spent the winter in our neighborhood. On January 24, 1908, two more were seen at Watchogue, and, on February 16, 1908, there were four in a hedge near St. Andrews Church, at Richmond.

Pipilo erythrophthalmus. Two, or possibly three chewinks, have spent the whole of last winter on Staten Island. Mr. W. T. Davis and the writer were somewhat surprised, on November 8, 1908, to see a male chewink near Huguenot, as we supposed the last of these birds had departed for its southern tour at least a month or two earlier. A week later we found a pair of chewinks near Richmond Hill. On December 13, the call of a towhee, repeated several times, was heard distinctly near Richmond Hill, and on December 20 a male towhee was seen near Huguenot. The one at Richmond Hill was seen or heard no more after the 13th of December, but on January 24 another, or perhaps the same individual was observed in some cedars about half a mile to the northward, near Buck's Hollow. Here the characteristic call note of a chewink was again heard on February 7 and 14, showing that the bird was still present.

At Huguenot a chewink was seen by Messrs. Howard H. Cleaves and Alanson Skinner on February 7; and on February 21 Mr. Cleaves found two chewinks in the same locality, both of which had perhaps been there all winter, though we had previously seen but one of them at a time.

Recently Introduced Grasses and Sedges¹

BY ARTHUR HOLLICK

In the vicinity of Arlington Station, at the end of the S. I. R. T. Railroad is an extensive area of filled in ground, formed by the dumping of garbage, ballast, and car sweepings over the surface of the salt meadows. In the ground thus formed a large number of introduced plants have gained a foothold. Many have become permanent residents of our island but others will doubtless not exist through the coming winter.

Of special interest are a number of grasses and sedges, most of which are apparently thoroughly established there and are rapidly spreading. In the following list those species marked with an asterisk (*) have not heretofore been recorded from the island:

Zea mays L. Indian corn.

Avena sativa L. Oats.

**Sorghum halepense* Pers. Johnson grass.

Phalaris canariensis L. Canary grass.

Panicum miliaceum L. Millet.

Ixophorus italicus (L.) Nash. Italian millet.

**Capriola dactylon* (L.) Kuntze. Bermuda grass.

Eleusine indica (L.) Gaertn. Yard grass.

**Eragrostis major* Host.

**Cyperus compressus* L.

**Cyperus rotundus* L.

The latter two species are natives of the Old World and, so far as I am aware, have not heretofore been definitely recorded in the United States north of Virginia, although they occur southward to the Gulf of Mexico.

¹ Presented March 20, 1909.

A Maple Tree Fungus¹

BY ARTHUR HOLLICK

Until about six months ago a row of large silver maples, *Acer saccharinum* L., was a prominent feature along the border of the Heineken property, now owned by Dr. Carl Walser, at the corner of Richmond Terrace and Livingston Place, Sailor's Snug Harbor. They ought to be still in their prime, but about twenty years ago they began to show indications of waning vitality, which became more and more evident in recent years. The ends of the branches and finally the branches themselves died and were broken by wind and snow, and last autumn the trees were cut down.

The trunks of these trees, at a distance of about three feet from the ground, have an average diameter of 32 inches. The annual rings are somewhat obscure toward the exterior, but they apparently average about fifty.

The main trunks are sound and healthy, without any indications of decay, but I have a section of one of the large limbs, about sixteen inches in diameter which tells a different story. About thirty-six annual rings are distinguishable. The first inner eighteen are relatively wide and are well defined, indicating a normal, vigorous growth during the first eighteen years, but after that they become narrower very rapidly, and near the margin they are so close together that it is practically impossible to discern them as separate rings. Evidently the tree was rapidly declining in vital energy, and the growth was very slow in recent years. About twelve inches represents the increase in diameter during the first eighteen years of the limb's growth. About four inches represents the increase during the last eighteen years. In other words it grew three times as fast in the first half of its life as it did in the second half.

¹ Presented April 17, 1909.

Another fact may also be noted. Close to the outer margin at one side of the section may be seen a knot hole, around which and extending beyond the center of the section, is a circular area of discoloration with finger-like extensions, similar to the conventionalized rays of a star, reaching outward towards the margin at the opposite side of the section. This discoloration is due to the mycelia or roots of a fungus, *Pyropolyporus igniarius* (L.) Murrill, which have entered into the interior from the knot hole, following around the annual rings and branching out along the medullary rays, destroying the tissues and gradually causing their disintegration and decay.

The knot hole, originally due to a broken branch, afforded a convenient breeding place for the spores of the fungus, whose mycelia slowly made their way into the interior. The fungus proper, or sporophore, when present, grows on the exterior, in the form of a hard, woody hoof- or shelf-like excrescence, having a furrowed appearance as it grows old, due to successive accumulations of annual layers, but I failed to find any indication of a sporophore in this instance. This fungus is not confined to the maple, but attacks also the oaks, beech, birch, apple, and other species of trees. An excellent description, with illustrations, may be found in "Studies of Some Shade Tree and Timber Destroying Fungi," by George F. Atkinson, in *Bulletin* no. 193, Cornell Univ. Agric. Exp. Station, Botanical Div., June 1901.

Now there is one point of special local interest in connection with this subject which deserves serious consideration. We have all noticed with sorrow how all of the trees and in fact nearly all kinds of vegetation along the North Shore, from New Brighton to West New Brighton, have been either blighted or completely destroyed by the smoke and gases emanating from the factories on the New Jersey shore on Constable Hook. These particular maple trees which we have under consideration are merely a few of the many examples that could be cited. Their destruction is primarily due to this cause. Year after year they have

been partially or completely defoliated, sometimes two or three times in a season, by the sulphurous fumes from the factories, especially when these fumes were converted into sulphuric acid by the moisture accompanying rain or fog. The result was inevitable. The vitality of the trees was lessened from year to year by the constant effort to recuperate. The twigs and then the branches gave up the struggle, and when these died and were broken off the resulting wounds became the starting points for the fungi which completed their destruction. Most fungi begin their destructive career in this way and we have every reason to believe that these maples and many other trees along the north shore, recently dead or showing evidence of early dissolution, would still be vigorous and clean limbed except for the blighting effect of the factory fumes. Their final destruction by fungoid growths must be regarded as purely incidental and secondary.

Additions to the List of Staten Island Orthoptera¹

BY WILLIAM T. DAVIS

With the additions here recorded the list of Orthoptera so far collected includes ninety species and named varieties. The original list was published in *Entomologica Americana*, 5: 78. April 1889, since which time additions have been noted in the *Proceedings of the Natural Science Association of Staten Island*, and in these PROCEEDINGS.

As in every branch of zoölogy the variable forms are of much interest and there are several Orthoptera native to the island that might be considered as either species or varieties with apparently equal propriety. All of the forms, however, may be separated from one another by at least some characters, and so it is quite proper that they should be named.

Melanoplus tribulus Morse. July, September.

Scudderia texensis S.-P. August, September.

Scudderia furcata Brunn. August, September.

In the original list, 1889, printed before Mr. Scudder's revision of the genus was published, *S. curvicauda* De Geer was given. While I have found this species at Jamesburg, N. J., and while it no doubt occurs on the island it must be omitted from the list for the present.

Xiphidium ensiferum Scudder. Some specimens have been collected on the island, which are doubtfully referred to this species, and which may be only a large form of *X. brevipenne*.

Xiphidium strictum Scudder. This species was found at Ar-rochar in 1904 by Mr. Lewis B. Woodruff. In September, 1908, numerous examples were found on the dry and rather barren hill where it occurs most numerously. While nearly all of the individuals have abortive tegmina and wings about three or four

¹ Presented April 17, 1909.

mm. in length, a few have these parts well developed. In a great many specimens collected, only two or three were intermediate in this respect, that is to say, they are either without wings or are well able to fly.

Orchelimum fidicinium Rehn and Hebard. August. Salt meadows.

Ceuthophilus uhleri Scudder. September, October, and, what is supposed to be the young, in early spring. *C. maculatus* was included in the 1889 list, but as no Staten Island specimens are now available, it had better be omitted, though it is a widely distributed species.

Miogryllus saussurei Scudder. June. It is to be found in the sandy parts of the island, but is not common. Its song is a slow *zee-ee-ee*, repeated at intervals of several seconds.

List of Eighteen Titles of Old Maps on Which Staten Island is Shown¹

BY THOMAS LETTS

This list is compiled from the collection belonging to the American Geographical Society, 15 West 81st Street, New York.

1. *Novi Belgii novaeque Angliae nec non partis Virginiae tabula multis in locis emendata a Nicolao Joannis Visschero* (with framed view at right foot, "Nieuw Amsterdam op t'Eylant Manhattans:" references to public buildings A-K). (1650?)

2. Map of New Netherlands with a view of New Amsterdam (now New York) A. D. 1656, copied from A. Vander Donck's Map for D. T. Valentine's "Manual of the Corporation." 1652.

3. *Belgii Novi Angliae nova et partis Virginiae novissima delineatio* (Amstelodami: J. Janssonius. 1657?). (Native villages, groups of animals, canoe and two wind roses adorn the plate.)

4. *Pascaert van Nieu Nederland Virginia en Nieu Engellant. Nieulycx uytgegeven t'Amsterdam By Hendick Dockner Boekverkooper en Graedbooghmaker, Inde Nieubrugsteegh In't Stuurmans gereetschap.* (1664?)

5. *Pascaerte van Nieu Nederlandt en de Engelsche Virginies van Cabo Cod tot Cabo Canrick* (P. Goos?) (1669?)

6. *Novi Belgii quod nunc Novi Yorck vocatur, Novaeque Angliae. Partis Virginiae Accuratissima et Novissima Delineatio.* 't Amsterdam Jacob Meurs (1671). [Probably the earliest map using the title "New York."]

7. *Pascaerte van Nieu Nederland Streckende van de Noordt Revier tot Hendrick Christian's Eylandt* (Amsteldam, Pieter Goos, 1675?). (This map is accompanied by 2 pp. English text.)

8. A map of New England and New York, F. Lamb Sculp.

¹ Presented by title April 17, 1909.

sold by Thos. Basset in Fleet Street, and Richard Chiswell in St. Paul's Church Yard. (London, 1676?)

9. *Pas Kaart Vande Zee Kusten van Niew Nederland Anders Genaamt Niew York Tusschen Renselaars Hoek en de Staaten Hoek Door Vooght Geometra t'Amsterdam By Johannis van Keulen Boek en Zee Kaart verkoper aande Nieuwe brugh Inde Gekroonde Lootsman.* (1681?)

10. A later issue of No. 1 altered to read "emendata per Nicolaum Visscher" and with very many additions to original. (1685?)

11. One of 10 inset plans on Herman Moll's Map of North America (1719?). This map shows soundings all around the island, but only the following names. "Stats Island: Wels, Old-towne, Newtown: Dover and Billop." Perth Amboy is called "Perth City," and Brooklyn, "Brookland."

12. A special plan of "New York Harbour according to the latest Surveys" shows "Staten Isle" on a fairly large scale, but has only the words "Ferry (on the N.), New Town, Castleton, Old Town and another Ferry on S. see: Captn. Cyprian Southack's western sheet of Survey of Sea Coast from New York to Cape Breton. (1733?)

13. A draught of New York from the Hook to New York Town by Mark Tiddeman, printed for W. Mount and T. Page upon Tower Hill, London. (1742?) (This publishing locality remains even to the present day the center of distribution for all maps or charts for sea-going purposes.)

14. A Draught of New York and Perthamboy Harbour (sic). (This is one of 13 "Particular Draughts and Plans of the Principal Towns and Harbours belonging to the English, French, and Spaniards, in America and West Indies. Collected from the best authorities" by Eman. Bowen (1744?).

15. A Chart of the Mouth of Hudson's River, from Sandy Hook to New York (one of three inset plans on "The Provinces of New York and New Jersey: with part of Pensilvania, and the Province of Quebec. Drawn by Major Holland, . . . 1776."

16. A sketch of the Operations of His Majesty's Fleet and Army under the Command of Vice Admiral, the Rt. Hble. Lord Viscount Howe and Genl. Sr. Wm. Howe, K.B. in 1776 (shows a fairly large map of S. I. with the positions of Lt. Genl. Dalrymple, with one Brigade of Hessians, a Detachment of the 14th Regt., some recruits and convalescents left for the security of Staten Island) with view of the Narrows.

J. F. W. Des Barres 1777.

17. Porti della Nueva Yorke Perthamboy (1777). (In this map the lettering of the title "New Jersey" covers the full length of Staten Island.)

18. Chart of the Entrance of Hudson's River, from Sandy Hook to New York, with the Banks, Depths of Water, Sailing marks, etc.: Scale 1 inch = 1 mile. Laurie & Wittle, 53 Fleet Street, London. 1794.

The Species of *Diplotaxis* Liable to Occur on Staten Island¹

BY CHARLES W. LENG

Prof. H. C. Fall, of Pasadena, Cal., has recently published a Revision of *Diplotaxis*, in the preparation of which Staten Island specimens heretofore identified as *tristis* Kirby receive a new name, *atlantis*. His work will make the identification of our species easier, and permits of my making an abstract which covers the species liable to occur on our Island.

LARGE HAIRY SPECIES

1. Upper surface with fulvous pubescence, dense and moderately long on the head and prothorax, shorter towards apex of elytra, 10-12 mm.

sordida Say.

- Upper surface with grayish pubescence, sparser, erect but excessively short throughout, 11 mm.

rugosioides Schaef.

LARGE GLABROUS SPECIES

2. Upper surface not hairy or pubescent.

Mentum feebly oblique behind, strongly declivous in front, the declivity more or less concave from side to side, its margin posteriorly arcuate and convex, but without raised line; pygidium with a somewhat vaguely impressed longitudinal median line, 10-12 mm.

atlantis Fall.

Mentum horizontal and nearly flat posteriorly, more or less declivous in front, the declivity margined by a more or less arcuate raised line and a row of erect setæ.

Thoracic angles more or less impressed.

Prothorax more finely and evenly punctate; color black, without trace of metallic lustre; pygidium without impressed line, 12-14 mm. Can. to N. Y.

tristis Kirby.

Prothorax more coarsely and quite irregularly punctate; elytra often with violaceous lustre; pygidium without impressed line, 12-14 mm. Mass. to Ga.

liberta Germ.

¹ Presented at the joint meeting of the Section of Biology and the New York and Brooklyn Entomological Societies, May 8, 1909.

SMALL SPECIES

3. Thoracic angles not impressed; much smaller.

Front with moderate or strong post-clypeal convexity. 3A.

Front with at most a very broad or feeble post-clypeal convexity. 3B.

3A. Basal margin of thorax not or scarcely impressed towards the hind angles, 8-9 mm. Ga., S. C., Fla. *frontalis* Lec.

Basal margin of thorax rather strongly impressed, especially towards the base, 8-9 mm. S. C., Ga., Fla., La., N. J. (?)

excavata Lec.

3B. Clypeal margin more or less distinctly angulate, each side of the median sinuosity or truncation; upper tooth of front tibia distinctly ante-median in position, hind tarsi scarcely or but very little longer than the tibia, 6.5-8 mm. N. J. to Texas.

frondicola Say.

Clypeal margin convex in outline from side to side, or with the middle truncate or subtruncate for a small distance.

Base of prothorax without marginal impressed line, 6.2-7.7 mm.

Ga., Fla. and N. J. (Alice-Liebeck collection.) *bidentata* Lec.

Base of prothorax distinctly impressed along margin, 7-10 mm.

N. Y. to Tex. *harperi* Blanch.

Of the above named species *sordida* and *atlantis* are included on account of actual Staten Island captures; *liberta*, *frondicola*, and *harperi* on account of actual captures nearby in N. J. and further because Staten Island is within the recorded range of those species—*rugosoides* recently described by Mr. Charles Schaeffer from N. H. is said by Prof. Fall to be the correct name for a specimen I obtained at South Pines, N. C., and it may therefore occur with us; *tristis* is a northern species and it is very doubtful if we shall ever find it here. The specimens heretofore called *tristis* are *atlantis*; *frontalis* is possibly the correct name for the *excavata* cited in Prof. J. B. Smith's New Jersey List. I have included both to call attention to their differences; *bidentata* is included on account of the Liebeck record in the New Jersey List but it is to be noted that outside of the New Jersey records all three, *frontalis*, *excavata*, and *bidentata*, are southern insects. Of the species cited in the New Jersey List—*sordida*, *liberta*, *frondicola* are confirmed—*atlantis* and *harperi* are added; while *tristis*, *excavata*, and *bidentata* are questioned. There remains one more, *truncatula* which is known only from Texas and Kansas and is so evidently an error that I have not included it at all.

It should be stated that *Diplotaxis* has long been known as a difficult genus and errors in determination are not to be wondered at.

One source of wonder or surprise to me in working with Prof. Fall's paper has been that after the results Prof. Smith obtained by examining the genitalia of the allied *Lachnosterna* Fall should have apparently made little effort to confirm his classification by their help. He says on page 5:

"Secondary sexual characters are not entirely wanting, but with a few exceptions they are of such a nature that it is rarely possible to determine the sex of a single specimen, and even in a considerable series containing both sexes, they can rarely be separated with certainty. . . . The male genitalia are quite simple as far as examined, while in the female they are entirely membranous and therefore useless for comparison. I have therefore not attempted systematic dissection, but leave this phase of the subject for the student who has the material and the time for its investigation."

For the Staten Islander who wishes to follow an interesting investigation the field is open and this paper will have fulfilled its object if it merely draws attention to a long neglected group. It is possible that *subcostata*, *densicollis*, *languida*, *rufa*, and even undescribed species may be added to our list as the result of such investigation; and it is desirable that an easy means of distinguishing sex be found.

The Pine Snake at Lakehurst, New Jersey¹

BY WILLIAM T. DAVIS

In presenting to the museum a medium sized pine snake *Pituophis melanoleucus* Daudin, collected at Lakehurst on May 13, 1909, I may take the occasion to record a large individual captured near the same place in the first week of July, 1908. The specimen was not seen by me, but on the authority of Mr. Curtis, owner of the Curtis Cranberry Bog, the serpent was the largest that he had ever observed. He found it near one of his berry houses and first placed it in one bag, but fearing that it would not be strong enough, he put another bag over that. The snake, bags and all, weighed 25 lbs. 1 oz. It was about nine or ten feet long. The usual length of fully grown individuals is about 6 to 8 feet.

The snakes captured by the inhabitants of Lakehurst are usually sent to Joseph Boger at Chatsworth, N. J., who is said to have sold several hundred dollars' worth in 1907. Large pine snakes usually bring about 15 cents a foot, and their skins can be used for a variety of purposes.

Mr. Charles W. Leng and I found a large pine snake west of the village of Manchester, now Lakehurst, in June, 1898, which we did not molest; and while near Cedar Grove, Ocean Co., N. J., in July, 1900, we came upon another. This was placed in a bag at the earnest solicitation of Mr. Cranmeer, who stated that he could get 50 cents for it. He was of the opinion that all of the pine snakes should be captured because he had known them to destroy many quail and rabbits.

A man who Mr. Howard H. Cleaves and I met in September, 1907, in the woods between Tuckerton and Munion Field, N. J., told us that he had been annoyed by the presence of a pine snake under the floor of his bunk in a cabin he occupied. If he turned

¹ Presented May 15, 1909.

suddenly and jarred the floor, the snake would hiss loudly after the manner of the species of *Pituophis*. He finally succeeded in catching the snake outside of its secure retreat, and killed it promptly.

Pine snakes are said to be generally cross, but the present individual as well as the two others that I have picked up, have not been more so than the average garter snake. They certainly should not be destroyed as is generally the custom, for between forest fires and the general habit of killing all snakes, they are fast becoming scarce. While they eat eggs, birds, and young rabbits, they also destroy mice as well. The general policy of hands off and non-interference with things natural, is a good one to pursue.

Literature Relating to Staten Island

PHOTOGRAPHING YOUNG CROWS¹

This is an illustrated description of a nest of young crows found on Staten Island. The locality is not given. One figure shows the young birds resting quietly in the nest, the other shows them with their mouths open, clamoring for food.

The author was evidently an enthusiastic photographer, but apparently of somewhat limited experience in regard to the nesting habits of crows, as indicated by his concluding remarks that "the crow is as wise a bird as flies, and knows how to build its nest out of reach of mankind."

Those who have found Staten Island crows' nests in apple, cedar, and other easily accessible trees, will be inclined to smile at such a broad generalization based upon a single isolated instance.

A. H.

STATEN ISLAND AND STATEN ISLANDERS²

This is a pamphlet of 100 pages, including twenty-four of advertisements, 4 plates and 4 figures in the text. The "fore word" states that it is an attempt "to tell those things which a stranger might most desire to know about New York's smallest borough."

The following main headings indicate the attempted scope of the work: Geographic Description, Historic Landmarks, Transportation Facilities, The Churches of All Denominations, The Charitable Institutions, The Schools, Hospitals, Amusements,

¹ By Clarence T. Busteed. *Country Life in America*, 15: 80 and 82, two figs. in text. November, 1908.

² Staten Island | and | Staten Islanders | Compiled by | The Richmond Borough Association | of Women Teachers | Cover Designed by Josephine Thorne | Editor, Margaret Louise Lynd | Publication Committee | Alice J. Bloxham, *et al.* | The Grafton Press | New York | 1909.

Theaters, Women's Clubs, Associations of General Interest, A Few Staten Islanders.

A number of Staten Islanders are credited with having assisted in the preparation of the work, but apparently the authors did not have opportunity to read proof, as typographical and other errors are so numerous as to seriously mar the value of the text. The geographical description is by Dr. Arthur Hollick; the notes on historic landmarks, by Mary Wolcott Green, including pictures of a number of our old houses, were selected from material furnished by our local historian, Ira K. Morris. The chapter on amusements will probably cause most readers to smile, as it consists exclusively of an enthusiastic description of South and Midland Beach, with their varied attractions of scenic railways, punching machines, tintype tents, dance halls, etc. Apparently theaters are not regarded as an ordinary medium of amusement and are given a separate chapter.

The women's clubs are the only ones enumerated; which might lead the stranger to imagine that our island was an Adamless Eden. The average person would probably be more interested to know about our several tennis and golf clubs and the Staten Island Club and Richmond County Country Club and other similar organizations.

The only two "Associations of General Interest" honored by mention are the Staten Island Association of Arts and Sciences and the Richmond County Agricultural Society. The former receives a somewhat disproportionate amount of space as compared with the latter.

Under the heading "A Few Staten Islanders" the following only are listed, with brief biographical notes: Edwin Markham, William Winter, Florence Morse Kingsley, George Daulton, Agnes McClelland Daulton, Rev. George A. Jamieson, Etta Anthony Baker, Anna Shaw Curtis, Arthur Hollick, Howard R. Bayne, William T. Davis, Ira K. Morris and Sidney Fuller Rawson. This selection is said to be one of elimination and the result to be "a brief mention of the best known writers, of the

three men who know Staten Island as none others know it, one politician who is a politician in the best sense of the term, and two public spirited citizens."

The general impression conveyed by the book is that most of the chapters are so incomplete as to give an erroneous impression of our resources under the several headings. In a second edition, which is apparently contemplated, these should be either omitted entirely or else made reasonably complete.

A. H.

STUDIES OF CRETACEOUS CONIFEROUS REMAINS FROM KREISCHERVILLE, NEW YORK¹

In the preface to this Memoir the statement is made that it "is designed to present the results derived from critical studies of coniferous remains from certain of the Cretaceous deposits at Kreischerville, Staten Island, New York, especially from two exposures, locally known as the Androvette pit and the Drummond pit. . . ."

Although it is a joint contribution by two authors the individual work of each is clearly specified. The senior author, Dr. Hollick, is stated to be responsible for identifications based upon external characters of the larger specimens and for the figures illustrating them, and the junior author, Dr. Jeffrey, for the preparation and microscopical examination of the smaller specimens and lignites, and determinations based upon internal structure as shown in the photomicrographs of sections.

The introduction gives a history and complete bibliography of previous investigations of the paleobotany of the vicinity, beginning with the brief reference to the lignite by Lewis C. Beck, in the First Annual Report of the New York State Geological Survey, in 1837, and terminating with a list of recent papers by the authors, preliminary to the one now before us, all of them

¹ By Arthur Hollick, Ph.D., New York Botanical Garden, and Edward Charles Jeffrey, Ph.D., Harvard University. Mem. New York Bot. Gard. 3: Roy. 8vo, pp. 138, pls. 29. May 20, 1909.

either published or reviewed in our PROCEEDINGS during the past five years.

The authors appear to have unearthed some very unique material, which is unusually well preserved and well adapted for critical study, as evidenced by the illustrations of internal structure and, if the interpretation of the facts are correct, some of the results attained are somewhat startling. For example, certain leafy twigs, identified from their external characters as *Frenelopsis gracilis* Newb., *Widdringtonites Reichii* (Ettingsh.) Heer, *Brachyphyllum macrocarpum* Newb., and *Sequoia Reichenbachii* (Gein.) Heer, were sectioned and determined to belong in the Araucarineae, instead of in the Sequoiineae and Cupressineae. The sections of these twigs shown in the illustrations are undoubtedly araucarineous in their affinities; but the whole importance of this fact is dependent upon whether they were correctly identified from the external characters in the first instance.

Among the many new genera described it is of interest to note that the name of the owner of the clay pits, and that of the locality, is recognized in the name *Androvettia statenensis*, while our fellow member, Mr. William T. Davis, is remembered in the new species *Strobilites Davisii*, based upon a well-preserved cone, collected by Mr. Davis.

Our museum material was freely utilized in the preparation of the memoir, and most of the figured specimens showing external characters are in our collection.

It is the most exhaustive and best illustrated contribution to our local science that has yet been issued from any source, and the authors are to be complimented on the thoroughness with which they have carried out their investigations.

C. L. P.

Records of Meetings

REGULAR MEETING, MARCH 20, 1909

The meeting was held in room 309, Borough Hall, St. George.

First Vice-President William T. Davis in the chair.

About twenty persons were present.

The minutes of the meeting of February 20, 1909, were read and approved.

SCIENTIFIC PROGRAM

Mr. Charles L. Pollard exhibited a series of specimens and gave an account of the silk moths of North America.

Dr. Arthur Hollick exhibited herbarium specimens and read "Notes on Recently Introduced Grasses and Sedges." (Printed in full in this issue, p. 189.)

Mr. James Chapin exhibited specimens and read "Local Notes on Migratory Birds." (Printed in full in this issue, p. 185.)

Mr. William T. Davis exhibited a collection of shells of soft clams, edible mussels, and other molluscs, picked up in woods and along fence lines near the south shore of the island, where they were apparently carried and dropped by crows after the contents had been eaten. A relatively large amount of such material is distributed in this manner.

The meeting then adjourned.

REGULAR MEETING, APRIL 17, 1909

The meeting was held in room 309, Borough Hall, St. George.

The meeting was called to order by First Vice-President William T. Davis.

About thirty-four persons were present.

The minutes of the meeting of March 20, 1909, were read and approved. President Howard R. Bayne arrived and took the chair.

On motion the President was authorized to appoint a committee on nominations to suggest candidates for trustees to be voted for at the annual meeting of the Association.

SCIENTIFIC PROGRAM

Dr. Arthur Hollick exhibited a section of a maple tree limb infected with a fungus, and read a paper on "A Maple Tree Fungus." (Printed in full in this issue, p. 190.)

Mr. William T. Davis exhibited specimens and read notes on "Additions to the List of Staten Island Orthoptera." (Printed in full in this issue, p. 193.)

Mr. Davis also exhibited a living larval eel, and gave an account of recent discoveries in regard to the breeding habits of eels.

Mr. Davis, on behalf of Mr. Thomas Letts, presented for publication a "List of Eighteen Titles of Old Maps on which Staten Island is Shown," compiled from the collection belonging to the American Geographical Society. (Printed in full in this issue, p. 195.)

Mr. James Chapin presented local notes on the nesting of the red-shouldered hawk, *Buteo lineatus* (Gmel.), fish hawk, *Pandion haliaetus carolinensis* (Gmel.), and barred owl, *Syrnium nebulosum* (Forst.), and on the occurrence of the saw-whet owl, *Nyctala acadica* (Gmel.), from observations made during the present spring.

Mr. Alanson Skinner presented notes on Staten Island salamanders and stated that recent extensive burning of the woodlands was causing them to become more and more scarce each year.

Mr. Chapin stated that the note of the swamp tree-toad, *Chorophilus triseriatus*, had been heard this spring near Annadale.

Mr. Charles L. Pollard called attention to the collection of Staten Island birds' eggs recently arranged and placed on exhibition. Also a collection of lepidoptera recently received in exchange from Mr. George P. Engelhardt, of the Brooklyn Institute Children's Museum.

The meeting then adjourned.

ANNUAL MEETING, MAY 15, 1909

The fourth annual meeting of the Association was held in room 309, Borough Hall, St. George.

President Howard R. Bayne in the chair.

About forty-five persons were present.

The minutes of the meeting of April 17, 1909, were read and approved.

The annual report of the Board of Trustees, including reports of the Executive, Auditing, and Publication Committees, and of the Curator-in-chief, were read and ordered placed on file.

The annual report of the Treasurer was read and ordered placed on file.

The annual report of the Secretary was read and ordered placed on file.

The President stated that the next order of business was the election of four trustees, to serve for a term of three years, to fill the vacancies caused by the expiration of the terms of Howard R. Bayne, Arthur Hollick, William T. Davis and Charles A. Ingalls, and called for a report from the committee on nominations.

The committee submitted the following report:

The undersigned committee begs leave to recommend for election to the Board of Trustees of the Staten Island Association of Arts and Sciences the following named gentlemen, to succeed themselves: Hon. Howard

R. Bayne, Dr. Arthur Hollick, Mr. William T. Davis, Mr. Charles A. Ingalls.

Respectfully submitted,

D. L. BARDWELL,
WM. MACDONALD,
JOHN RADER,
Nominating Committee.

The President asked if there were any other nominations and no others being made it was *voted*, that nominations be closed and that the secretary be instructed to cast one affirmative ballot for the nominees submitted by the committee.

The secretary cast the ballot as instructed and the President declared Howard R. Bayne, Arthur Hollick, William T. Davis and Charles A. Ingalls elected trustees of the Association for the ensuing three years.

Dr. Philip Dowell, recorder of the Section of Biology, presented a report on the organization of the section and an abstract of its proceedings for the year.

Miss Edith M. Pollard, recorder of the Section of Art, presented a report on the organization of the section and an abstract of its proceedings and activities from the date of its organization.

The President then delivered his annual address.

SCIENTIFIC PROGRAM

Mr. William T. Davis exhibited a living pine snake and read a paper on "The Pine Snake at Lakehurst, New Jersey." (Printed in full in this issue, p. 201.)

Mr. Charles P. Benedict exhibited a living milk snake, captured near the Manor Road, West New Brighton.

Mr. Alanson Skinner exhibited photographs of a woodcock, *Philohela minor* (Gmel.), sitting on its nest, taken at Woodrow on May 11. Also photographs taken subsequently by Mr. Howard H. Cleaves.

Mr. Skinner also showed a photograph of forty-two box tortoises, *Tranene carolina*, the result of one day's collecting on Staten Island. Mr. Skinner stated that for some time past he had been numbering each one captured by cutting a serial number in the under shell and then releasing the captive. A record of the date of each number and the place of capture was kept, in order that each individual tortoise could be recognized if captured again at any time or in any locality. One hundred and twenty had been numbered to date.

The meeting then adjourned.

Annual Reports

ANNUAL REPORT OF THE BOARD OF TRUSTEES

May 15, 1909

The Board of Trustees, with the cordial coöperation and assistance of the several standing committees and the officers of the Association, has conducted the routine business of the Association and attended to all matters requiring attention and executive action.

Ten meetings were held as follows: The annual meeting on May 23, 1908; stated meetings on October 3, 1908, January 2 and April 3, 1909; special meetings on June 9, July 21, November 16 and December 15, 1908, January 23 and March 5, 1909.

Many new and some unexpected conditions developed during the year which required careful consideration and more or less experimenting before definite action could be safely taken.

The relations between the Association and the city are now on a thoroughly satisfactory basis. The Board of Estimate and Apportionment approved of our application for an appropriation of \$4,000 for the maintenance and equipment of the museum and library, and this amount was included in the City Budget for 1909 and has been available since January 1 for the payment of adequate salaries for a curator-in-chief and museum assistant and for the purchase of all necessary supplies for the proper care and maintenance of the collections and library. We are now practically on an equality with our sister institutions in the other boroughs, so far as recognition by the city is concerned.

The museum was formally opened to the public on May 23, 1908, with appropriate exercises:

Since that date various experiments have been tried in regard to the hours of opening. At first it was necessary to close the museum to the public on all except three days in the week, in order that the collections might be properly installed and arranged for display. The museum was open to the public on Tuesdays, Thursdays and Saturdays, from 10 A. M. to 5 P. M. It was next opened on Monday evenings also, from 7:30 to 10 o'clock, but the attendance did not warrant the trouble, and this experiment was abandoned.

After a large part of the preliminary work of arranging and cataloging had been accomplished the open hours were changed to Tuesdays, Wednesdays, Thursdays and Fridays, from 1 to 5 P. M. and Saturdays from 10 A. M. to 5 P. M.

The experiment was also tried during the month of April, of keeping open one hour later in the afternoon, until 6 o'clock, but this was abandoned by reason of lack of attendance.

The present arrangement of keeping open on the afternoons of Tuesdays, Wednesdays, Thursdays and Fridays and all day Saturdays, and reserving the remainder of the time for museum work, is probably as satisfactory an adjustment as can be made under existing conditions.

The Board of Trustees, however, adopted the following expression of policy in regard to the matter, at the stated meeting of the Board held on April 3, 1909:

"The terms and conditions under which the museum and library shall be open to the public must necessarily be determined in accordance with whatever circumstances and conditions may obtain from time to time; but in no event shall any entrance fee be charged at any time, and,

"It is further declared to be the earnest desire of the Board of Trustees that the museum and library may be open to the public every day in the year, Sundays and legal holidays included, except when the necessity may arise for temporarily closing it for the purpose of cleaning or making repairs or for the installation of exhibits, and,

"It is hereby declared to be the intention of the Board of Trustees to arrange such a schedule of opening, and to carry the same into effect, whenever adequate facilities, and means applicable to the purpose, shall have been provided by the city."

The room was open on each of the evenings when the Borough President held his monthly reception in the Borough Hall.

Members of the Association are not restricted to the hours of public opening but may freely visit and make use of the museum and library at all reasonable hours. The attendance on the part of the public has been exceedingly gratifying, as shown in the appended report of the curator-in-chief.

The board also approved of a series of Saturday afternoon talks to school children on various natural history subjects by the museum staff and several of the members who volunteered for the experiment, and the results were exceedingly encouraging. These were given during December, January and March and the total attendance was 405, or an average of 40.5 on each afternoon. Details are given in the appended report of the curator-in-chief. The exhibits at the branch public libraries at Stapleton and St. George were continued under the auspices of the curator-in-chief and arts and antiquities committee of the Association with marked success.

The museum cases were rearranged under the direction of the museum and library committee, so as to provide additional floor space at the north end of the room and this has enabled the Association to hold its meetings in the museum instead of in the reading room of the public library at St. George. This change has met with the approval, apparently, of all concerned, and has added materially to the pleasure and interest in the meetings.

Three sections were formed with the approval of the trustees: Section of Biology approved on June 9, 1908; Section of Art on March 5, 1909, and Section of Literature within the past three weeks. The first two have organized and have done excellent work, as well as having been a source of enjoyment to the members.

The new monthly publication, the Museum Bulletin, the first number of which was issued last August, has served to acquaint the members with

the museum activities and also to inform the members of meetings and matters of general interest.

The Board has elected one member to patronship, Mr. Alanson Skinner, in recognition of his valuable gift of Indian relics to the museum. The Board has also elected two corresponding members, Jonathan Dwight, Jr., A.B., A.M., of New York, physician and ornithologist, and William Brewster, A.B., A.M., of Cambridge, Mass., ornithologist and manager of the Brewster Museum.

During the year the Board also elected the following to active membership: John Q. Adams, Mrs. John Q. Adams, Bradford B. Babbit, Mrs. Bradford B. Babbit, Mrs. Bertha K. Baker, Mrs. Darwin L. Bardwell, Joseph J. Barth, Miss Mary A. M. Bayne, Mrs. George R. Boynton, Mrs. Edward C. Bridgman, Charles S. Burch, Mrs. Charles S. Burch, Miss S. Gertrude Clark, Miss Elizabeth B. Curtis, John J. Driscoll, Benjamin F. Funk, Abel J. Grout, William M. Halloran, Frank Hankinson, James Harrigan, Miss Zillah Heidenheim, Thomas O. Horton, Mrs. Charles Humphrey, Mrs. Charles W. Hunt, John P. Ilsley, Mrs. John P. Ilsley, Mrs. Charles H. Ingalls, Mrs. Mary L. Janeway, Henry C. Johnston, Mrs. Marcel Kahle, Emil F. Kipper, Miss Lucy J. Kipper, George C. Lenington, Louis W. Levy, Nathan J. Lowe, John Macrea, James C. Marriot, James McBrien, Frank G. McCreery, Miss Mary B. Millspaugh, Leonard McC. L. Mitchell, James Nolan, Miss Agnes L. Pollard, Miss Edith M. Pollard, Michael J. Reardon, Edward J. Russell, Charles Schaefer, Mrs. Emily Sears, William L. Sexton, Alexander D. Shaw, Charles M. Shipman, Arthur Sloan, John W. Tilley, Henry E. Wallace, Mrs. Henry E. Wallace, Mrs. Park J. White, Mrs. William G. Willcox, Miss Annie F. Wood, Miss Elizabeth M. Woodruff.

Respectfully submitted to the Board,

ARTHUR HOLLICK,
Secretary.

ANNUAL REPORT OF THE EXECUTIVE COMMITTEE

The committee held four meetings and transacted all business referred to it by the Board for investigation or determination.

Other matters requiring attention were also considered and acted on and subsequently reported to and approved by the Board.

ARTHUR HOLLICK,
Secretary.

ANNUAL REPORT OF THE AUDITING COMMITTEE

The committee examined the books and accounts and audited the annual and quarterly reports of the treasurer, dated respectively May 16, 1908, October 3, 1908, January 2, 1909, and April 3, 1909. The same were found to be correct in all particulars, and were so certified by the committee.

GEORGE S. HUMPHREY, *Chairman,*
STAFFORD C. EDWARDS.

ANNUAL REPORT OF THE PUBLICATION COMMITTEE

The committee, in coöperation with the curator-in-chief, has issued the Museum Bulletin each month, including No. 1, August, 1908–No. 10, May, 1909.

Part I, Volume II, of the PROCEEDINGS (October, 1907–January, 1908, inclusive) was issued October 17, 1908.

Copy for Part II (February, 1908–May, 1909, inclusive) has been prepared and is ready for publication.

Copy for Part III is in hand and can be prepared for publication at any time, and Part IV, to include the records of the present annual meeting, can be ready during the coming summer.

The issue of these parts during the autumn would again bring the publication of our PROCEEDINGS up to date, after the recent unavoidable delay.

PHILIP DOWELL, *Chairman*,

WILLIAM T. DAVIS,

ARTHUR HOLLICK.

ANNUAL REPORT OF THE SECRETARY

Number of members on roll at date of last annual report:

Active	298	
Life	2	
Honorary	2	
Corresponding	2	
Patrons	4	
		<hr/>
		308

Since elected:—

Active	64	
Corresponding	2	
Patron	1	
		<hr/>
		67
		<hr/>
		375

Resigned	17	
Dropped from the roll	8	
		<hr/>
		25

On roll at date	350
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This now includes 337 active, 4 corresponding, 2 life and 2 honorary members and 5 patrons.

ARTHUR HOLLICK,
Secretary.

ANNUAL REPORT OF THE TREASURER

Income

Balance from last year \$ 189.57

Since received:

Dues	\$ 802.50
Subscriptions to Myers purchase fund	125.00
Subscriptions to special maintenance fund	15.00

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Subscriptions to PROCEEDINGS	30.35	
Lecture and concert committee	435.63	
Interest on life membership fund	4.20	
Loans	1,050.00	
City appropriation	875.72	\$3,338.40
Total		\$3,527.97

Disbursements

Printing PROCEEDINGS	\$ 96.73	
Miscellaneous printing and stationery	61.24	
Sundry expenses	66.04	
Subscriptions to periodicals	4.00	
Administration expenses	44.73	
Purchase of Myers collection	158.00	
Items charged to special maintenance	118.10	
Items charged to acct. of lecture and concert com.	518.51	
Note of March 9, 1909	250.00	
Interest on notes to May 1, 1909	22.17	
Salaries to Dec. 31, 1908 (paid from Ass'n funds)	841.64	
Salaries and supplies (paid from city approp.) ...	875.72	
Salaries and supplies awaiting reimbursement from city appropriation	316.04	
Total		\$3,372.92
Balance in hand		\$ 155.05

C. A. INGALLS,
Treasurer.

ANNUAL REPORT OF CURATOR-IN-CHIEF

TO THE BOARD OF TRUSTEES,

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

Gentlemen: I have the honor to submit herewith my second annual report as Curator-in-chief of the Museum, covering the fiscal year of the Association from May 16, 1908, to May 15, 1909.

The Museum

The Museum was formally opened to the public with appropriate exercises on May 25, 1908. Owing to the short period of preparation and the lack of trained assistance, many of the exhibits were only temporarily installed; but with the material already on hand and that which was loaned for the occasion, it was possible to make a creditable display. The cases were apportioned as follows:

	Table Cases	Uprights
Geology	3	
Mineralogy	2	
Ornithology	1½	3
Invertebrate zoölogy	4½	

Archeology	4	
Anthropology	1	3
Relics and antiquities	2	
Art objects		3

With the receipt of new accessions during the year it has been found advisable to change this assignment somewhat, giving greater prominence to geology and less to invertebrate zoölogy. Our constant effort has been to keep in touch with our visitors and profit by their comments and suggestions whenever practicable. The year's experience has demonstrated that since children form the larger part of our constituency, it is necessary to plan the exhibits to serve educational needs. For this reason the collection of birds and birds' eggs, butterflies, and Indian implements have been especially popular, and have been examined with interest by many of the older visitors. At the present time the cases are arranged as follows:

	Table Cases	Uprights
Geology—Drift fossils of Staten Island	1	
Geology—Stratigraphic	3	
Geology—Structural	1	
Geology—Minerals	2	
Mounted birds of Staten Island		3
Birds' eggs and nests	1½	
Marine life	½	
Insect architecture		1
Indian archeology of Staten Island	4	
Iroquois Indian implements, etc.....		3
Pueblo Indian archeology	2	
Shells	1	
Staten Island antiquities	2	
Art objects		2

There are also six wall cases of butterflies and various maps, photographs, etc. Two additional cases of art objects are displayed at the St. George library.

On July 3, 1908, by authority of the Board, an agreement was effected with Mr. Arthur E. Bostwick, chairman of the Circulating Department of the New York Public Library, whereby the Museum undertook to provide exhibits for the cases in the reading room of the St. George branch, in return for the use of the room by the Association for its monthly meetings. I assigned these cases to the Committee on Art, which has kept them well filled with a highly interesting and valuable exhibit of ceramics, old costumes, laces, etc. Although the Association is no longer meeting in the library, it seems desirable to continue the use of these cases in view of the additional space thus afforded for display. I have also placed an exhibit from time to time in the Stapleton library at the request of the librarian in charge.

Labels

When the Museum was opened all the specimens were provided with typewritten labels. These are being replaced as rapidly as possible by permanent labels, printed on the Museum press. The work of labeling progresses slowly because of the care necessary in obtaining accurate information, often involving considerable research. It is hoped that all permanent exhibits may be completely labeled by the close of the calendar year.

Accessories

The supports and other accessories used in mounting specimens for exhibition were for the most part purchased with the appropriation made by the city last year. For the geological specimens white pasteboard trays bearing a shoulder for the label are used; these are also employed for the general collection of minerals, but the quartzes and agates are displayed on square wooden blocks painted dead black. The birds are mounted on perches of natural twigs; birds' nests are placed in the wire supports designed by the late Major Bendire, of the National Museum. The birds' eggs are laid upon a bed of sawdust dyed black, the various groups separated by pasteboard strips. Archeological specimens are provided with wooden blocks painted cream yellow, the case having a backing of similar color. In most of the cases white, green or brown burlap is used for the backing, giving a very satisfactory and artistic effect.

Accessions

The total number of accessions is 98, representing 3,082 specimens, apportioned among the different subjects as shown in the following table:

	Accessions	Specimens
Zoölogy	33	1,306
Botany	10	924
Geology	22	196
Anthropology	1	250
Arts and antiquities	8	43
Books, photographs and maps	23	285
Miscellaneous	1	78
	98	3,082
By gift		1,518
By exchange		964
By purchase		± 600
		3,082

Of special importance was the collection of reptiles, batrachians, and miscellaneous objects purchased from Mr. Charles Myers, of New York City, upon the recommendation of the curator-in-chief, a fund for this purpose having been subscribed by about thirty members of the Association. The gift of Mr. Alanson Skinner's excellent collection of objects illustrating

the life and customs of the Iroquois Indians in central New York was also of great value to use. Other important accessions were the gift of 75 exotic butterflies by Mr. George P. Engelhardt, of the Children's Museum in Brooklyn; 47 government documents from the Superintendent of Documents in Washington; 797 herbarium specimens by exchange with the U. S. National Museum; various specimens of insects from Mr. William T. Davis and Mr. George Franck; and a large number of geological specimens collected especially for the Museum by Dr. Hollick. At various times I have made local collections intended to fill up gaps in our study series, and I have also purchased some rare and interesting insects which are now deposited in the Museum, and which will be given to it ultimately.

Museum Catalogue

A typewritten card catalogue of all the specimens in the Museum was commenced in July and considerable progress has been made. Different colors are used to distinguish the various subjects, as indicated in the following table, which also gives the total number of specimens thus far catalogued in each subject.

	Color	No. of cards written	No of specimens represented
Anthropology and archeology	buff	1,380	2,107 +
Botany	green		
Arts and antiquities	yellow		
Zoölogy	salmon	1,634	5,250 +
Geology, mineralogy and paleontology...	blue	921	1,423 +
		3,935	8,780 +

The main catalogue is arranged numerically, and is thus a chronological record. It will be supplemented by a species catalogue, in which all the specimens of a given species will be grouped together on one card, thus showing the actual contents of any department.

Library

The library has been enriched by the gift of a number of volumes from various sources, and continues to receive the valuable exchanges which have been its most prominent feature. The current list of exchanges is appended to this report. The books are being classified on the Dewey system, 2,018 having been up to the present time classified and accessioned. A subject catalogue will be prepared after this arrangement is complete and the necessary binding has been done.

The Museum Staff

Mr. Harold Nelson served as Museum Assistant until the end of May, 1908. On June 9 Miss Agnes L. Pollard, of the Smithsonian Institution, was appointed Museum Assistant by the Board, and entered upon her

duties July 6. She has been occupied throughout the year chiefly in the preparation of the museum and library catalogues, in clerical and secretarial work, and in attending to visitors and supplying information. My own time has been largely occupied with administrative details, with correspondence and reports and with attention to visitors. This interferes considerably with the important work of preparing, mounting and labeling specimens, which ought to proceed with little interruption in order to secure the best results. The Museum cannot, therefore, be expected to show the same degree of progress that would be possible with an additional scientific assistant. For the same reason I have hitherto undertaken no research work, but during the coming summer I expect to carry on some studies in heredity of hybrid characters, using for this purpose a number of species of our American silk moths, which are easily bred from the egg. The results of this study will be offered to the Association for publication and the specimens, which are my own property, will be presented to the Museum and used for exchanges with other institutions.

With the exception of the Museum Assistant, the staff remains the same as last year: Curator-in-chief, Mr. Charles Louis Pollard; Museum Assistant, Miss Agnes L. Pollard; Honorary Curator of Zoölogy, Mr. William T. Davis; Honorary Assistant in Ornithology, Mr. James Chapin; Honorary Curator of Botany, Dr. Philip Dowell; Honorary Curator of Geology and Paleontology, Dr. Arthur Hollick; Honorary Assistant in Anthropology, Mr. Alanson Skinner.

Museum Activities

During the year three courses of Saturday afternoon talks for the benefit of children in the medium and upper grades of the public schools were given in the Museum. The speakers were all members of the Museum staff, and the lectures were in general well attended.

Date	Speaker	Number in attendance	
December 5, 1908	Miss Agnes L. Pollard	96	
December 12, 1908	Miss Agnes L. Pollard	71	
December 19, 1908	Miss Agnes L. Pollard	46	
December 26, 1908	Miss Agnes L. Pollard	20	
		—	233
February 13, 1909	Mr. James Chapin	30	
February 20, 1909	Miss Agnes L. Pollard	40	
February 27, 1909	Mr. Charles Louis Pollard	36	
		—	106
March 20, 1909	Dr. Arthur Hollick	21	
March 27, 1909	Mr. Charles Louis Pollard	28	
April 3, 1909	Mr. Alanson Skinner	17	
		—	66
			405

The Museum Bulletin

Early in July the Board approved my recommendation that a new publication be issued, to be known as the Museum Bulletin, and to contain the official notices of the Association, together with such items of information about the Museum as might be calculated to interest the members. I was authorized to act as editor, under the supervision of the Committee of Publications. The first number was issued in August, and the Bulletin has been published monthly since that time. At first it was printed on the Museum press, but after entry at the New Brighton post office as second class matter it was deemed advisable to have the printing done professionally. The Bulletin is distributed free of charge to members of the Association and to our exchange list.

The Needs of the Museum

Apart from the constant necessity for larger quarters and an additional member of the Museum staff, there are certain important requirements in our general work. The numerous complete but unbound volumes in the library are suffering from being handled and from exposure to dirt. Of these there is an accumulation of at least seven years awaiting binding. The files of old Staten Island newspapers, many of them of great value, are rapidly disintegrating for lack of proper protection in strong board covers, and in their present condition they are quite inaccessible.

In the Museum there are several departments in which a relatively small amount of money could be invested to good advantage in the purchase of material. For example, the Chapin collection of Staten Island birds lacks only the aquatic birds and one or two others to be an absolutely complete collection of our avifauna. It would be eminently desirable if a small museum fund could be raised for these purposes, expendible by the Board upon the recommendation of the Curator-in-chief, with the approval of the Museum Committee. There is no way in which members and friends of the Association could evince a more practical interest in the Museum or accomplish more real good to the general public than by contributing to such a fund. Without in any way depreciating the value of the gifts we have received, I venture to point out here that in many cases these gifts are, for various reasons, unsuitable for exhibition purposes. Frequently they are of value for study, but are of little use to the public. Sometimes they can only be relegated to storage. We have now reached the point where each department of the Museum has definite needs, which can be supplied by intelligent purchases only, or by special collecting excursions, often out of the question with our small staff.

Appended are statistics relating to matters discussed in this report.

Respectfully submitted,

CHARLES LOUIS POLLARD,
Curator-in-chief.

May 15, 1909.

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EXPENDITURES ON ACCOUNT OF BOND ISSUE AUTHORIZED BY THE CITY IN SEPTEMBER, 1907

Museum Furniture

The Siegel-Cooper Co., showcases	\$1,798.48	
John Wanamaker, tables, chairs, desks and miscellaneous fittings	211.45	
John Wanamaker, folding chairs	36.00	
The Macey Co., bookcases	50.00	
The Globe-Wernicke Co., bookshelves	47.50	
Koller and Smith, filing and card cabinets, equipments.	191.65	
Koller and Smith, storage case for specimens	84.00	
Library Bureau, book truck and library supplies	49.50	
Underwood Typewriter Co., typewriter and desk	112.00	
		\$2,580.58

Apparatus, etc.

Kny-Scheerer Co., glass jars and other apparatus.....	329.51	
American Entomological Co., insect cabinets, Riker mounts, apparatus	222.95	
F. Blake Webster Co., taxidermists' supplies	11.15	
Eimer and Amend, chemicals and preservatives	118.11	
Albert Venino, modeling wax	35.16	
Devoe and Reynolds, paints	13.75	
Whitall-Tatum Co., corks and bottles	10.05	
		\$ 740.68

Stationery and Mounts

J. Spencer Turner Co., burlap backing	70.88	
E. G. Soltman, compo board	50.80	
Richard C. Loesch, cardboard	64.50	
Jones and Skinner, manila paper	29.25	
Ward's Natural Science Establishment, pasteboard trays	57.00	
D. S. Hillyer, pamphlet covers	40.00	
		\$ 312.43

Miscellaneous

Barnhart Type Foundry Co., printing outfit	138.71	
Barnhart Type Foundry Co., type, supplementary	44.14	
Montgomery and Co., tools	62.80	
C. G. Norman, carpentry work	20.00	
Carrère and Hastings, architect's fee	89.92	
		\$ 355.57
		\$3,989.26

RECORDS OF MEETINGS

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ATTENDANCE

Month.	Number of days	Number of visitors	Average per day
May (26), 1908	2	66	33
June, 1908	13	145	11 2/13
July, 1908	12	92	7 2/3
August, 1908	13	166	12 10/13
September, 1908	13	182	14
October, 1908	14	273	19 1/2
November, 1908	10	318	31 4/5
December, 1908	14	410	29 2/7
January, 1909	13	367	28 3/13
February, 1909	19	489	25 14/19
March, 1909	22	550	25
April, 1909	22	401	18 5/18
May (15), 1909	11	138	12 5/11
	<u>178</u>	<u>3,597</u>	

ATTENDANCE ON SPECIAL OCCASIONS

	Number of visitors
Opening day, May 23, 1908	100
Evenings (October, November and December, 1908)	11
Borough President's four reception evenings	127
	<u>238</u>

The Museum has also been open at the meetings of the Association held March 20 and April 17, and at the joint meeting of the Section of Biology with the Brooklyn and New York Entomological Societies on May 8. The attendance at the Saturday afternoon talks is separately tabulated.

EXCHANGES

Academy of Science of St. Louis	Transactions
Academy of Natural Science of Philadelphia	Proceedings
American Academy of Arts and Sciences	Proceedings
Augustana College and Theological Seminary	Publications
Boston Society of Natural History	Proceedings
Bronx Society of Arts and Sciences	Transactions
California Academy of Sciences	Proceedings
Canadian Entomologist	
Central Museum of the Brooklyn Institute	Museum News, Science Bulletin, Cold Spring Harbor. Monograph
Chicago Academy of Sciences	Special publications
Cincinnati Society of Natural History	Journal
Colorado College	Colorado College Studies

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Colorado Scientific Society	Proceedings
Columbia University	Contributions from Depts. of Geology and Botany
Davenport Academy of Science	Proceedings
Elisha Mitchell Scientific Society	Journal
Field Museum of Natural History	Zoölogical, Botanical, Geo- logical, and Report Se- ries
Geological Institution, University of Upsala	Bulletin
Geological Survey of Canada	Annual Reports
Geological Survey of Ohio	Reports and Bulletin
Historical and Scientific Society of Mani- toba	Transactions
Instituto Geologica de Mexico	Boletin, Parergones
Kaiserlichen Leopoldinisch-Carolinschen Akademie	Abhandlungen, Leopoldina
Kansas Academy of Science	Transactions
Lloyd Library	Mycological Notes, Bulletin
McGill University	Papers
Missouri Botanical Garden	Annual Reports
Museo Nacional de Costa Rica	Paginas Ilustradas
Museo Nacional de Montevideo	Anales
Natural History Society of Glasgow	Transactions
Natural History Society of New Brunswick	Bulletin
New York Academy of Sciences	Annals
New York Botanical Garden	Bulletin
New York State Library	State Museum Reports
Nova Scotia Institute of Science	Proceedings
Oberhessischen Gesellschaft für Natur und Heilkunde	Berichte
Ohio State Archeological and Historical Society	Quarterly
Ottawa Field Naturalists Club	Ottawa Naturalist
Public Library of St. Louis	Director's Annual Report
Public Museum of the City of Milwaukee	Annual Report
Rochester Academy of Science	Proceedings
Roger Williams Park Museum	Bulletins, Annual Report
Sapporo Natural History Society	Transactions
Smithsonian Institution	Annual Reports, Smithson- ian Quart., Bulletin U. S. National Museum, Contr. from U. S. National Herbarium
Societas Entomologica Bohemiae	Papers, Acta
Societas pro Fauna et Flora Fennica	Meddelanden, Acta
Sociedade Scientifica de Paulo	Revista
St. Paul Institute of Arts and Sciences	

Torrey Botanical Club	Bulletin
Tufts College	Studies
University of California	Bulletin, Publications in Zoölogy, Botany, Ar- cheology
U. S. Department of Agriculture	Selected publications
U. S. Geological Survey	Annual Reports, Bulletins, Monographs
University of Kansas	Science Bulletin
University of Missouri	Science series studies
University of Montana	Bulletins
University Museum, Michigan Academy of Science	University Bulletin, Re- prints
University of Vermont	Bulletin
Wilson Ornithological Club	Wilson Bulletin
Wisconsin Academy of Sciences, Arts and Letters	Bulletin, Transactions
By subscription	American Naturalist
By subscription	Psyche
By gift of Mr. William T. Davis	Entomological News
By gift of Dr. Arthur Hollick	Bulletin New York State Department of Health
By gift of Dr. Arthur Hollick	Plant World
By gift of Dr. Arthur Hollick	Science
By gift of Mr. Charles Louis Pollard	Publishers' Weekly

Also many single numbers of Transactions, Reports, etc., from institu-
tions not regularly on our exchange list.

LIST OF DONORS TO THE MUSEUM AND LIBRARY

Miss Laura A. Barrett	Mrs. C. W. Hunt
Hon. Howard R. Bayne	Mr. A. K. Johnston
Mr. C. P. Benedict	Miss S. Jennie Kingsley
Mrs. Russell Bleecker	Mr. Emil F. Kipper
Dr. N. L. Britton	Miss Mary W. Lever
Mrs. N. L. Britton	Mr. William H. Mitchell
Miss Bertha G. Brooks	Mr. Ira K. Morris
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Mr. Appleton Clark	Mr. Leavitt C. Parsons
Mr. E. D. Clark	Mr. Charles Louis Pollard
Mr. Howard H. Cleaves	Mr. Edward Quillan
Hon. George Cromwell	Mr. John Rader
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Mr. O. M. Curtis	Mr. Amzi T. Rogers
Mr. William T. Davis	Mr. William Allaire Shortt
Mr. Stafford C. Edwards	Mr. Alanson Skinner
Mr. George F. Engelhardt	Mr. Charles E. Sleight
Mr. George Franck	Mr. Richard P. Smith

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Mr. L. W. Freeman
Mrs. O. P. Geoffroy
Mr. Frederick Hildebrandt
Mr. J. Blake Hillyer
Master Jack Hillyer
Dr. Arthur Hollick
Mr. Henry P. Hoppin
Mr. George S. Humphrey
Miss Mary Humphrey

Hon. John Bright Stevens
Master Hamilton Switzer
U. S. National Museum
U. S. Superintendent of Documents
Messrs. Van Houten & Zoon
Mr. D. M. Van Name
Mrs. W. G. Willcox
Mr. Oswald G. Zill

Proceedings of the Section of Biology

MARCH 13, 1909

The meeting was held in the museum.

Messrs. G. P. Engelhardt and C. E. Olsen were present as guests.

The chairman submitted a draft of bylaws, which were read and adopted, as follows:

BYLAWS, SECTION OF BIOLOGY

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

I

The officers of the Section shall be a Chairman and a Recorder. They shall be elected annually, by ballot.

II

The duties of the Chairman and the Recorder shall be such as usually pertain to those officers. In addition to keeping a record of the Section, the Recorder shall have charge of all moneys received or expended by the Section and shall pay all bills, subject to the instruction of the Sectional Committee.

III

The officers, together with the Curator-in-chief of the Museum, ex-officio, shall constitute the Sectional Committee, which shall be empowered to transact the executive business of the Section.

IV

The Section shall hold an annual meeting for the election of officers on the second Saturday in April of each year. A report of the proceedings of the Section for the fiscal year of the Association shall be sent by the Recorder to the Secretary of the Association in advance of the annual meeting of the latter.

V

These Bylaws may be amended by a majority vote at any meeting of the Section, if approved by the Sectional Committee, or

provided notice in writing has been given to all members at least two weeks previously.

Mr. Howard H. Cleaves exhibited a revolving back auto graflex and explained its use.

Mr. Alanson Skinner showed and presented the skull of an opossum, recorded at the previous meeting as having been found at Princes Bay.

Mr. G. P. Engelhardt, of the Brooklyn Museum, exhibited specimens of the bella moth, showing a wide variation of forms, from the Texan and Porto Rican *Utetheisa ornatrix* L. to the Cuban and Jamaican *U. venusta* Dalm. and the typical *U. bella* L. of Cuba and our own locality, back to the *U. venusta* Dalm. of Porto Rico, again running into the *U. pulchella* of Europe.

Dr. Arthur Hollick read a paper on "Photographing a Crow's Nest with Young," sent by Mr. George S. Humphrey together with four photographs. The nest was found in a tree near Martling's Pond, and had been photographed by Clarence T. Busteed, who had published the article in *Country Life in America*.

Dr. Hollick commented on some grasses and sedges found in ballast near Arlington, Staten Island, during the past summer and exhibited mounted specimens of several of these, some of which were new to this region. (Printed in full in this issue, p. 189.)

Mr. William T. Davis showed a list of Staten Island moths prepared by himself. He exhibited also some specimens of nuts showing the way mice and squirrels gnaw the nuts to get the kernel.

Mr. C. L. Pollard exhibited and commented on some eggs of crows from Staten Island.

APRIL 24, 1909

The meeting was held in the museum.

Mr. Alanson Skinner reported having seen, on the afternoon preceding the meeting, two larval *Spelerpes ruber* at Horseshoe Spring, and a blacksnake some distance away basking in the sun on a rock.

Mr. James Chapin exhibited a male American toad, *Bufo americanus*, collected at Van Cortlandt Park, New York, about April 16, 1909. This species has not been found on Staten Island, where its place is taken by *B. fowleri*, but is rather common at the locality mentioned above. Most of the American toads at Van Cortlandt Park had ceased singing by April 22, while Fowler's toad was first heard this year on April 17, by Mr. Howard H. Cleaves. He showed also a four-toed salamander, *Hemidactylium scutatum*, taken at Annandale, Staten Island, on April 4, 1909. This is the only specimen of this species that has been reported from Staten Island for some years.

JOINT MEETING, MAY 8, 1909, WITH THE BROOKLYN ENTOMOLOGICAL SOCIETY AND THE NEW YORK ENTOMOLOGICAL SOCIETY

The meeting was held in the museum, Mr. Charles L. Pollard, chairman of the section, presiding, and 25 persons present.

After a brief address of welcome by the chairman and a vote of thanks to Mr. C. A. Ingalls for furnishing his stereopticon, Professor John B. Smith, president of the Brooklyn Entomological Society, took the chair.

Mr. Charles Schaeffer, of the Museum of the Brooklyn Institute, read a paper on Rudimentary and Vestigial Structures in Insects. Rudimentary structures, he defined, are those which are beginning to exist or are being evolved. Vestigial structures are those which are diminishing in usefulness and tending to disappear. Of rudimentary structures in insects none could be quoted to a certainty. He exhibited a series of insects with vestigial parts. In the *Strategus* group of the Scarabæid beetles the thoracic horn conspicuous on the male is replaced by an indentation on the females, but intergrading females show the horns in a descending scale of size. The male humble bee of several species shows vestiges of the pollen basket on the tibiae. Where Coleoptera have become wingless there is usually a vestige

of wing remaining. *Pasimachus californicus* and a species of *Callosoma* were quoted. In a species of *Diapheromera* from the Dry Tortugas the two pairs of wings are clearly developed although too small to be of any use. For mouth parts comparison was made between species of sphinx, in which the tongue (*i. e.*, maxillary palpi) was longer than the body, and *Samia cecropia* whose palpi are scarcely visible. *Hornia minutipennis*, from Utah, a beetle parasite in the burrows of bees, never emerges, hence its wings are lost and the elytra greatly reduced. The females resemble the helpless bee larvæ. Both sexes have large abdomens but differ in their antennæ. Certain Diptera that live in the nests of ants have lost considerable wing area. Workers with vestigial wings are not uncommon.

Mr. Charles W. Leng suggested speculations whether or not the short elytra of the Staphylinid beetles might not be rudimentary.

Dr. Smith suggested the possibility that the mouth parts of the *cecropia* might be rudimentary, since the moths are supposed to be descended from the caddis flies, whose mouth parts are not well developed.

Mr. Leng read a paper entitled Notes on Interesting Coleoptera, discussing especially the species of the Scarabæid genus *Diplotaxis* known to occur on Staten Island (published in full in this issue, p. 198).

Mr. Charles L. Pollard exhibited and commented on certain rare North American Saturnian moths, notably *Copaxa lavendera* of Mexico, which presents not only sexual dimorphism but great individual variation, especially in the males. A number of specimens of *Samia columbia nokomis* Brodie, raised from cocoons received from Rev. Clement Hoyler, of Alberta, Canada, were exhibited. Mr. Pollard stated that this variety was as much entitled to specific rank as *S. gloveri*.

Mr. George P. Engelhardt briefly discussed Thayer's theory of obliterative coloration as applied to insects. A number of illustrative examples were cited.

Mr. Charles W. Leng, President of the New York Entomological Society, then assumed the chair, and Professor John B. Smith gave a lecture, illustrated by the stereopticon, on The Mosquito Problem.

A test count of mosquito larvæ in a small pond warranted an estimate that "in 20,000 square feet of water there were 10,600,000" wrigglers. These mosquitoes produced six to eight broods annually. The exterminations of this menace to health cost \$35.

The dense swamps in forests are seldom breeding places. A pond covered with duck weed or other heavy vegetation gives the enemy little breathing place. The *Anopheles*, the malaria carrier, prefers semi-open water with sandy sloping banks. In towns the worst haunts are in casual pools, or various bodies of water artificially created. A trolley road to Coney Island, by cutting off the water ways beneath the track, has created an enormous area of ideal breeding places. The open village gutter where the water can collect is a menace of the first importance.

For the great area of salt marsh the only remedy is draining. So far, about 3,000,000 feet of drainage ditch have been dug in New Jersey. The work on Staten Island has made very good progress, thanks entirely to health officer Doty.

Ditches were formerly dug about 18 inches deep. These filled. The new ditch is three feet deep. The section of excavation shows that the upper half is a mass of roots. In after years the upper half of the ditch tends to close somewhat, leaving a clear drain beneath. The ditch drains satisfactorily about 100 feet on either side. Of course the ditch must have a mouth in open water. They occasionally have to be 2,000 feet long.

In one instance, where an outlet was distant, satisfactory results were obtained by centering the ditches at a large excavation dug down until the water was influenced by the tide. This was kept stocked with "killies," which would thrive well were it not for the depredations of the turtles. As it is, the pool is stocked each year at trifling expense.

Instance after instance can be cited where land held almost

valueless from lack of drainage and the mosquito nuisance, has been redeemed and become residential sections.

The cost of drainage has been reduced greatly by the introduction of digging machines. By hand three men can dig almost 600 feet of ditch a day. Two types of spade have been developed, cutting a sod 10 inches wide and 36 deep. With a spading machine, of which a number of patterns have been made, the same force can dig about three times as much.

Proceedings of the Section of Art

At a meeting of the Board of Trustees of the Association held March 5, 1909, the application of certain members of the Association for permission to form a Section of Art was granted.

The first meeting was held March 10, 1909, at the museum.

Dr. John Quincy Adams was elected chairman. Pending his acceptance, Mrs. T. Livingstone Kennedy was elected temporary chairman. The committee of twelve, known as the Art Committee, was reappointed as the Committee on Exhibits of the Section, Mrs. Kennedy continuing as its chairman. Mrs. William G. Willcox, Mrs. Park J. White, and Miss S. Gertrude Clark were appointed a committee to prepare a plan of permanent organization.

Mrs. Willcox presented a paper on "Lowestoft Ware" (printed in full in this issue, p. 179).

At the meeting held April 6, 1909, the Section elected the following officers: Mrs. C. W. Hunt, Vice-chairman; Miss Edith M. Pollard, Recorder; Mrs. William G. Willcox, chairman of the Committee on Public Meetings.

Mrs. J. Q. Adams presented a paper on "Wedgewood" and Mrs. T. Livingstone Kennedy one on "Old China."

The following are the bylaws adopted by the Section:

BYLAWS, SECTION OF ART

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

I

The officers of the Section shall be a Chairman, Vice-Chairman, and Recorder. They shall be elected annually, by ballot.

II

The duties of the Chairman, Vice-Chairman, and Recorder shall be such as usually pertain to those officers. In addition to keeping a record of the proceedings of the Section, the Recorder

shall have charge of all moneys received or expended by the Section, subject to the instruction of the Sectional Committee.

III

There shall be two standing committees in the Section, whose duties shall be as follows: The Committee on Exhibits shall have general direction of the art exhibits loaned to the Museum, subject to the authority of the Trustees of the Association. The Committee on Public Meetings shall have charge of the arrangements for public meetings, lectures or entertainments given under the auspices of the Section. These committees shall be appointed by the Chairman of the Section at the annual meeting. The Chairman of the Section and the Curator-in-chief shall be ex-officio members of both standing committees.

IV

The officers of the Section, together with the Chairman of the two standing committees, shall constitute the Sectional Committee, which shall be empowered to transact all business of the Section not otherwise provided for.

V

The Section shall hold an annual meeting for the election of officers in April of each year subject to the call of the Chairman, and at such other times as may be determined. One-sixth of the total membership shall constitute a quorum of the Section.

VI

A report of the proceedings of the Section for the fiscal year shall be sent by the Recorder to the Secretary of the Association in advance of the annual meeting of the latter.

VII

These Bylaws may be amended by a majority vote at any meeting of the Section, if approved by the Sectional Committee, or provided notice in writing has been given to all members at least two weeks previously.

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Publications of the Association

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Special No. 21, Vol. V, No. 5, March 14, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. VII, No. 15, March 10, 1900. "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jr. Pamph., pp. 33, pls. i-iv.

Special No. 23, Vol. VIII, No. 25, October, 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

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Part II, January-May, 1906, pp. 21-69, issued July 9, 1906.

Part III, October-December, 1906, pp. 71-92, issued April 17, 1907.

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